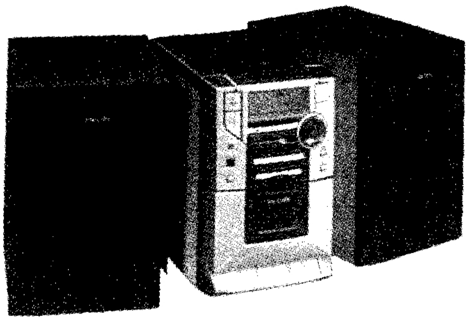
Micro System

MC-10

all versions

Service
Service
Service



Service Manual

COMPACT
disc
DIGITAL AUDIO

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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

**CLASS 1
LASER PRODUCT**

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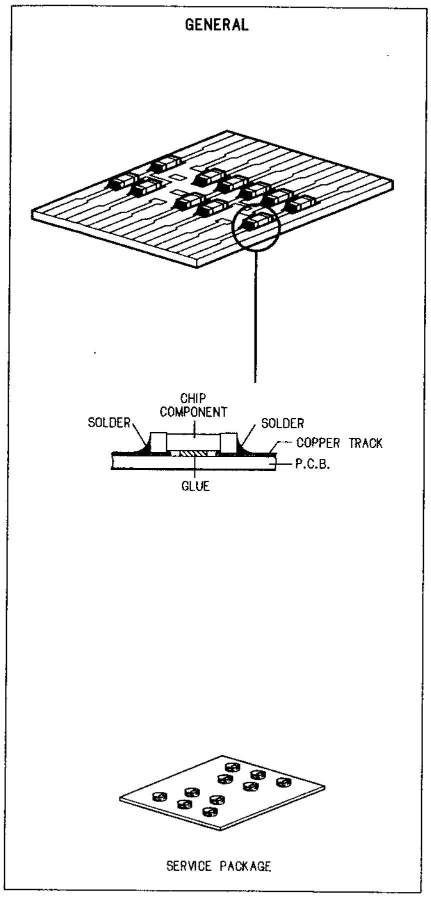
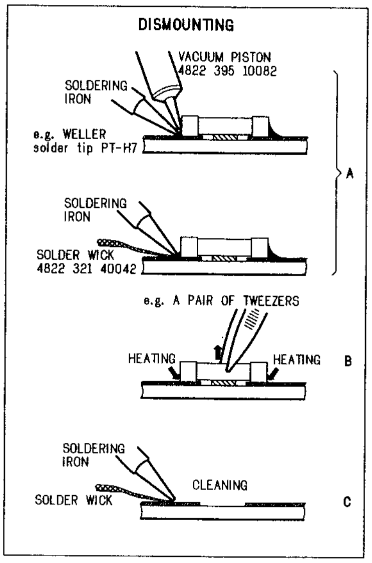
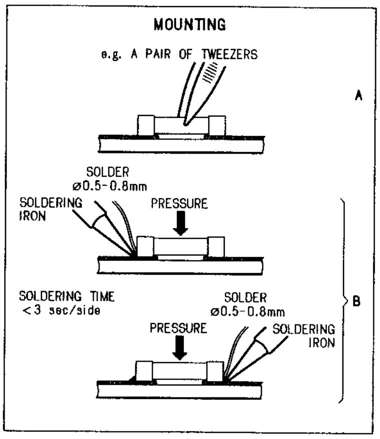
PCS 104 556

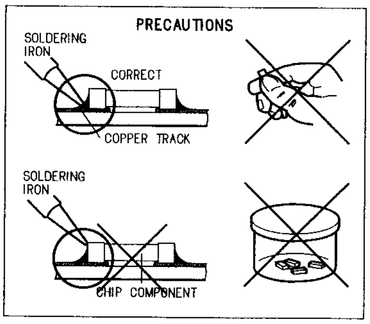
PHILIPS

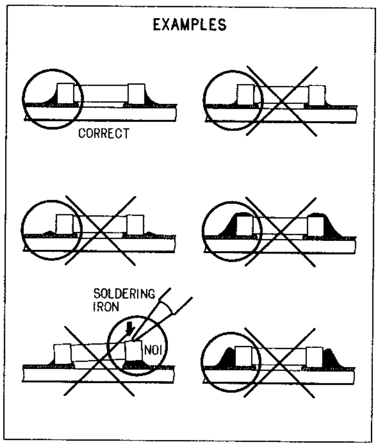
HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON 4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK 4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER ⌀0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME <3 sec/side
SOLDER ⌀0.5-0.8mm
B
PRESSURE
SOLDERING IRON


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


EXAMPLES
CORRECT
SOLDERING IRON
NO!

ESD

© WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

f ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

d WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

ñ WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

i AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

SAFETY

©

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

f

Les normes de sécurité exigent que l´appareil soit remis à l´état d´origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

d

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

ñ

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

i

Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

CLASS 1
LASER PRODUCT

© **DANGER**: Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

s Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

ß Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

©

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

f

"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/21	120 / 230 V
	-/22/29	230 V
	-/37	120 V
Mains frequency	-/22/29	50 Hz
	-/21	50 / 60 Hz
	-/37	60 Hz
Battery	remote	3 V (R6 x 2)
Power consumption	normal	40 W
	Standby	3 W
Dimension (W x H x D)		223 x 140 x 247 mm
Weight		5.6 Kg

AMPLIFIER

Output power	mains	2 x 4 W
Speaker impedance		2 x 8 ohm
Frequency response		100 Hz - 10 kHz (±4dB)

TUNER - FM SECTION

Tuning range		87.5 - 108 MHz
IF frequency		10.7 MHz ± 0.02 MHz
Sensitivity		16 dBf at 26dB S/N
Selectivity	300kHz	55 dB
IF suppression		85 dB
Image suppression		40 dB
Channel separation	1kHz	28 dB

TUNER - AM SECTION

Tuning range	MW	531 - 1602 kHz
	-/37	530 - 1700 kHz
Tuning range	LW	153 - 279 kHz
IF frequency		450 kHz ± 1 kHz
Sensitivity	MW	< 3.5 mV/m at 26 dB S/N
	LW	< 4.2 mV/m
Selectivity	MW	< 22 dB
	LW	< 35 dB
IF rejection	MW	< 64 dB
Spurious rejection ratio	MW	< 58 dB
	LW	< 51 dB
Image rejection ratio	MW	< 40 dB
	LW	< 47 dB

AUDIO CASSETTE RECORDER

Frequency response	120 - 10000 Hz
Wow & flutter	0.4 % (DIN)
Fast winding time	110 sec.
Channel difference	> 1 dB
S/N ratio (unw.)	< 40 dB
S/N ratio (wght.)	< 48 dB

COMPACT DISC

Frequency response		20Hz – 20kHz within 1.5dB
S/N ratio (unw.)		> 85 dB
S/N ratio (A-wght.)		> 90 dB
THD+N	1 kHz	> 72 dB
Channel crosstalk		> 50 dB
Channel unbalance		< ±1 dB

SERVICE TOOLS

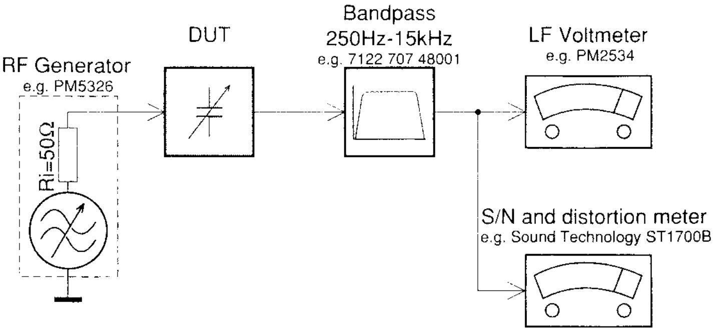
TORX T10 screwdriver with shaftlength 150mm	4822 395 50423
TORX screwdriver set SBC 163	4822 295 50145
Audio signal disc SBC 429	4822 397 30184
Playability test disc SBC 444	4822 397 30245
Test disc 5 (disc without errors) + **Test disc 5A** (disc with dropout errors, black spots and fingerprints) SBC 426/426A	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause")	4822 397 30155
Universal test cassette Fe SBC 420	4822 397 30071

AVAILABLE ESD PROTECTION EQUIPMENT

anti-static table mat	large 1200x650x1.25mm	4822 466 10953
	small 600x650x1.25mm	4822 466 10958
anti-static wristband		4822 395 10223
connection box (3 press stud connections, 1M)		4822 320 11307
extendible cable (2m, 2M , to connect wristband to connection box)		4822 320 11305
connecting cable (3m, 2M , to connect table mat to connection box)		4822 320 11306
earth cable (1M , to connect any product to mat or to connection box)		4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)		4822 310 10671
wristband tester		4822 344 13999

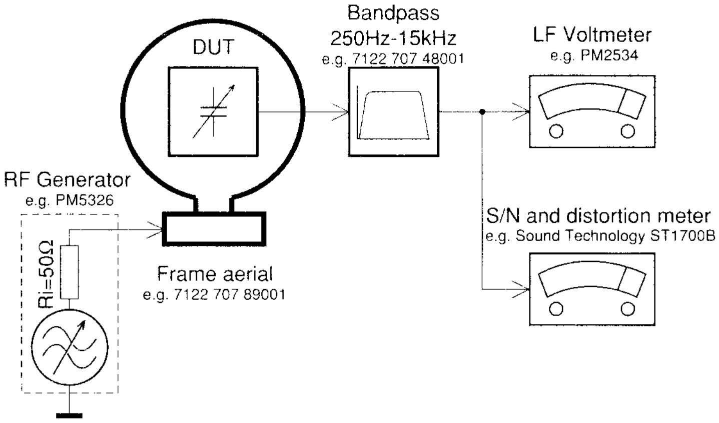
SERVICE MEASUREMENTS

Tuner FM


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

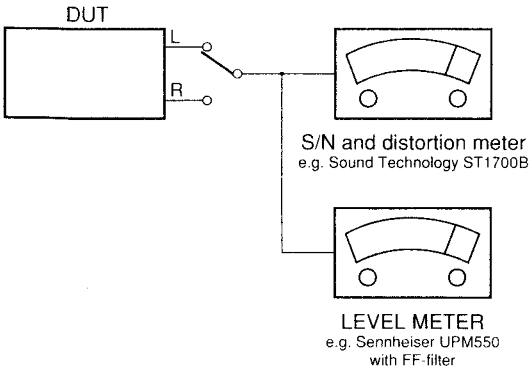
Tuner AM (MW,LW)


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

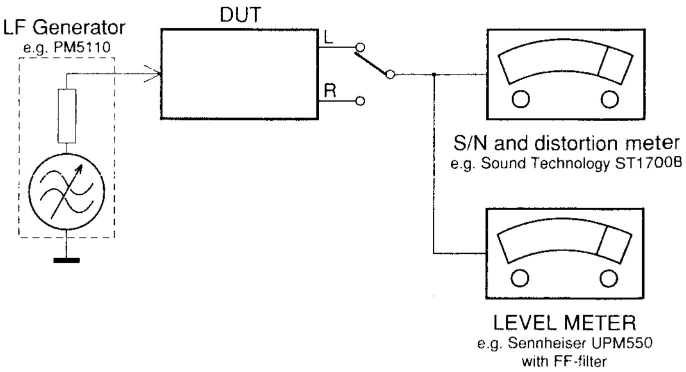
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)

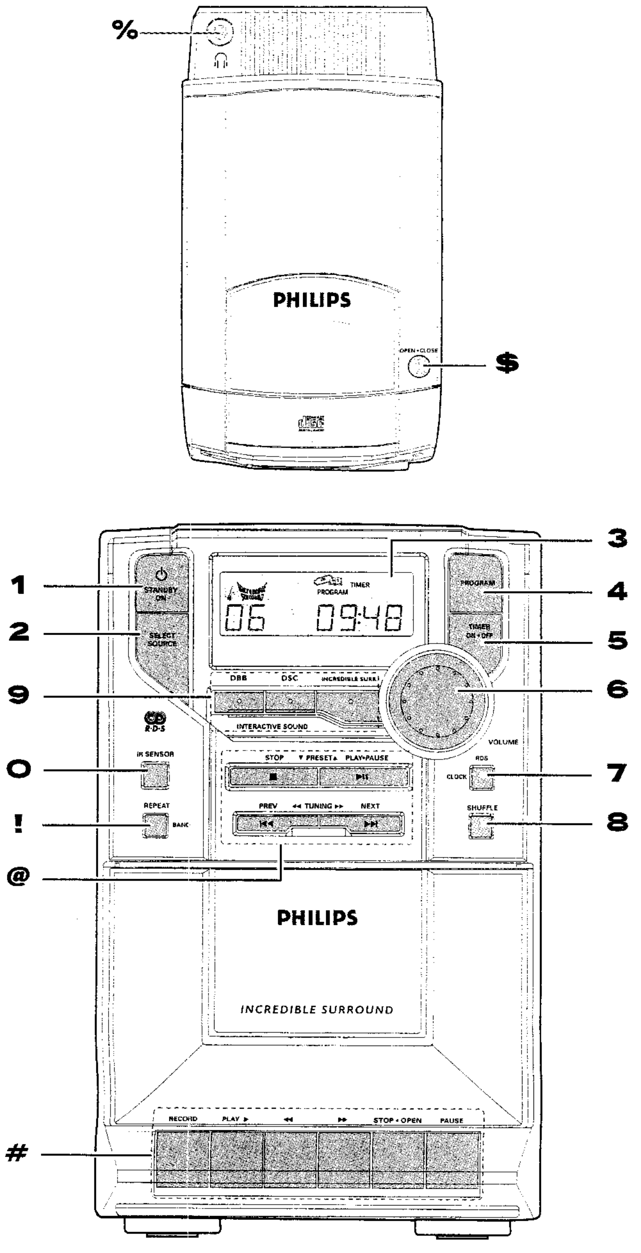

DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

RECORDER

Use Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

CONNECTIONS AND CONTROLS


%
$
PHILIPS
OPEN•CLOSE
1
2
9
0
!
@
#
3
4
5
6
7
8
STANDBY ON
SELECT SOURCE
PROGRAM
TIMER ON•OFF
TIMER
06 09:48
DBB
DSC
INCREDIBLE SURR.
INTERACTIVE SOUND
VOLUME
iR SENSOR
REPEAT
BAND
CLOCK
RDS
SHUFFLE
STOP
PRESET
PLAY•PAUSE
PREV
TUNING
NEXT
PHILIPS
INCREDIBLE SURROUND
RECORD
PLAY
STOP•OPEN
PAUSE

Controls on the system and remote control

1 STANDBY ON y
- switches the system to standby/on.
- *on the remote control only* - switches the system to standby.

2 SELECT SOURCE
- selects the respective sound source for CD/ TUNER/ TAPE /AUX.
- switches on the system.

3 Display
- shows the status of the system.

4 PROGRAM

for CD .... programmes tracks and reviews the programme.

for Tuner .... programmes tuner stations manually or automatically.

5 TIMER ON•OFF
- activates/deactivates or sets (*on the system only*) the timer function.

6 VOLUME (- / +)
- adjusts the volume level.
- *on the system only* - adjusts the hour and minutes for the clock/timer functions.

7 CLOCK/RDS
- sets the clock function.
- displays RDS information.

8 SHUFFLE
- plays CD tracks in random order.

9 INTERACTIVE SOUND controls:

DBB .... (Dynamic Bass Boost) enhances the bass.

DSC .... (Digital Sound Control) selects sound characteristics: OPTIMAL/ ROCK/JAZZ/POP.

INCREDIBLE SURROUND

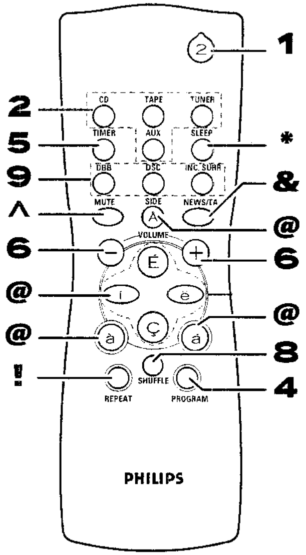
.... creates a super-enhanced stereo effect.

0 iR SENSOR
- infrared sensor for remote control.

! REPEAT/BAND

for CD .... repeats a track/CD programme/ entire CD.

for Tuner .... selects waveband.


1
2
5
9
^
6
@
@
!
*
&
@
6
@
8
4
CD
TAPE
TUNER
TIMER
AUX
SLEEP
DBB
DSC
INC.SURR.
MUTE
SIDE
NEWS/TA
VOLUME
SHUFFLE
REPEAT
PROGRAM
PHILIPS

@ Mode Selection

STOP 9 .... stops CD playback or erase a CD programme.

PLAY•PAUSE É Å

(É, SIDE/ Å)... starts or interrupts CD play.

PRESET 43

(¡ , ™) .... selects a preset radio station.

PREV ¡ 1 / NEXT 2™

(¡ , ™) .... skips to the beginning of a current track/previous/ subsequent track.

(à , á) .... fast searches back and forward within a track/CD.

TUNING à á

(à , á) .... tunes to radio stations.

# Tape Deck Operation

RECORD .... starts recording.

PLAY 2 .... starts playback.

à / á .... fast rewinds/winds the tape.

STOP•OPEN ...stops the tape; opens the tape compartment.

PAUSE .... interrupts recording or playback.

$ OPEN•CLOSE
- opens/closes the CD door.

% n
- connect headphones.

^ MUTE
- interrupts and resumes sound reproduction.

& NEWS/TA
- activates RDS news and Traffic Announcement (*not for all versions*).

*** SLEEP**
- activates/deactivates or selects the sleeper time.

Notes for remote control:

– First select the source you wish to control by pressing one of the source select keys on the remote control (e.g. CD , TUNER, etc.).

– Then select the desired function (É, í , ë, etc.).

Troubleshooting

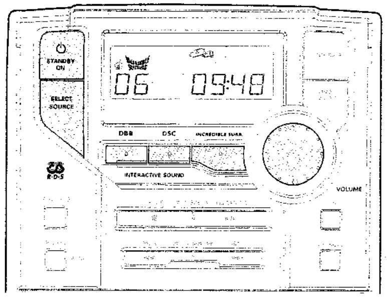
WARNING

Do not open the system as there is a risk of electric shock! Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty

¶ If a fault occurs, first check the points listed below before taking the system for repair.
¶ If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

Symptom	Remedy
CD PLAYER OPERATION	
"NO DISC" is displayed.	¶ Check if the disc is inserted upside down. ¶ Wait until the moisture condensation at the lens has cleared. ¶ Use a finalised CD-R(W). ¶ Replace or clean the disc, see Maintenance.
RADIO RECEPTION	
Poor radio reception.	¶ The signal is too weak, adjust the antenna or connect an external antenna for better reception. ¶ Increase the distance from TV or VCR.
TAPE DECK OPERATION	
Recording or playback cannot be made.	¶ Clean deck parts, see Maintenance. ¶ Use only NORMAL (IEC I) tape for recording. ¶ Apply a piece of adhesive tape over the missing tab space.
GENERAL	
Does not react when any buttons is pressed.	¶ Press STANDBY ON to switch off the system. Remove the AC power plug from the wall outlet, then reconnect the power plug and switch on the system again.
No or poor sound.	¶ Adjust the volume. ¶ Disconnect the headphones. ¶ Check that the speakers are connected correctly. ¶ Check if the stripped speaker wire is clamped.
Reversed left and right sound.	¶ Check the speaker connections and location.
Remote control does not function properly.	¶ Select the source (CD, TUNER, etc.) before pressing the function button (É, í, ë, etc.). ¶ Reduce the distance to the system. ¶ Insert the batteries with their polarities (+/– signs) as indicated. ¶ Replace the batteries.
Timer is not working.	¶ Set the clock. ¶ Press TIMER ON•OFF to switch on the timer. ¶ If recording is in progress, stop recording.

Basic Functions



IMPORTANT:
Before you operate the system, complete the preparation procedures.

Switching on

There are 3 ways to switch the system on:

¶ press 2 **STANDBY ON** on the system and the last selected source switches on;
¶ press **SELECT SOURCE** on the system and the last selected source switches on;
¶ press **CD, TUNER, TAPE** or **AUX** on the remote control.

To switch the system to standby, press 2 **STANDBY ON** once on the system (2 on the remote control).

¶ If in tape mode or recording mode, press **STOP•OPEN** first.
The volume level, interactive sound settings, last selected source and tuner presets will be retained in the player's memory.

Power-saving automatic standby

As a power-saving feature, the system automatically switches to standby 15 minutes after a tape or CD has reached the end and no control is operated.

Adjusting volume and sound

1 Turn the **VOLUME** control anti-clockwise to decrease or clockwise to increase volume on the system (or press **VOLUME** – / + on the remote control).
Display shows the volume level VOL and a number from 0-32.

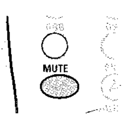
2 Press the Interactive sound control, **DSC** on the system or remote control once or more to select the desired sound effect: OPTIMAL (no indication)/ ROCK ( ) / JAZZ ( )/ POP ( ).

3 Press **DBB** to switch bass enhancement on or off.
Display shows: DBB if the DBB is activated.

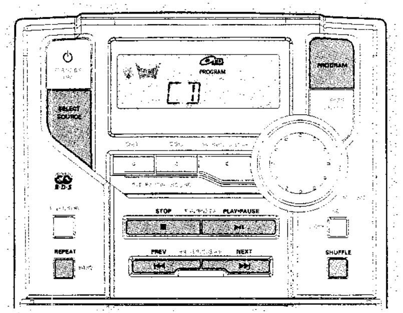
4 Press **INCREDIBLE SURROUND (INC. SURR.** on the remote control) to switch the surround sound effect on or off.
Display shows: INCREDIBLE SURROUND if activated.

Note:
– The effect of INCREDIBLE SURROUND may vary with different types of music.

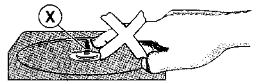
5 Press **MUTE** on the remote control to interrupt sound reproduction instantly.
Playback will continue without sound and the display shows MUTE.



¶ To activate sound reproduction you can:
- press **MUTE** again;
- adjust the volume controls;
- change source.



IMPORTANT:
The lens of the CD player should never be touched.

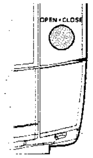


Playing a disc

This CD player plays Audio Discs including CD-Recordables and CD-Rewritables.

¶ CD-ROM, CD-I, CDV, VCD, DVD or computer CDs, however, are not possible.

1 Select **CD** source.



2 Press **OPEN•CLOSE** on the top of the system to open the CD compartment.

OPEN is displayed when you open the CD compartment.

3 Insert a disc with the printed side facing up and press down on **OPEN•CLOSE** to close the CD door.

READ is displayed as the CD player scans the contents of a disc, and then the total number of tracks and playing time are shown.

4 Press **PLAY•PAUSE 2;** (on the remote control **2**) to start playback.

Current track number and elapsed playing time of the track are displayed during disc playback.

5 To interrupt playback press **PLAY•PAUSE 2;** (on the remote control SIDE/;). Press **PLAY•PAUSE 2;** (on the remote control **2**) again to resume play.

The display freezes and the elapsed playing time flashes when playback is interrupted.

6 To stop disc playback, press **STOP 9**.

Note: CD play will also stop when;
– the CD door is opened.
– the disc has reached the end.
– you select another source:TAPE, TUNER or AUX.
– you select to standby.
– you press the tape deck PLAY 2 key.

Selecting a different track

¶ Press **PREV ¡ 1** or **NEXT 2™** on the system, (on the remote control ¡ or ™) once or repeatedly until the desired track number appears in the display.

¶ If you have selected a track number shortly after loading a disc or in the PAUSE position, you will need to press **PLAY•PAUSE 2;** (on the remote control **2**) to start playback.

Finding a passage within a track

1 Press and hold down on **PREV ¡ 1** or **NEXT 2™**.

The disc is played at high speed and low volume.

2 When you recognise the passage you want, release **PREV ¡ 1** or **NEXT 2™**.

Normal playback continues.

Note:
– During a disc programme or if SHUFFLE/ REPEAT active, searching is only possible within the same track.

Different play modes: SHUFFLE and REPEAT

You can select and change the various play modes before or during playback.The play modes can also be combined with PROGRAMME.

SHUFFLE	tracks of the entire disc/ programme are played in random order
SHUFFLE and REPEAT ALL...	to repeat the entire disc/ programme continuously in random order
REPEAT ALL ...	repeats the entire disc/ programme
REPEAT	plays the current track continuously

1 To select your play mode, press the **SHUFFLE** or **REPEAT** button before or during playback until the display shows the desired function.

2 Press **PLAY•PAUSE 2;** (on the remote control **2**) to start playback if in the STOP position.

If you have selected SHUFFLE, playback starts automatically.

3 To return to normal playback, press the respective **SHUFFLE** or **REPEAT** button until the various SHUFFLE/ REPEAT modes are no longer displayed.

¶ You can also press **STOP 9** to cancel your play mode.

Programming track numbers

Programme in the STOP position to select and store your disc tracks in the desired sequence. If you like, store any track more than once. Up to 20 tracks can be stored in the memory.

1 Press **PROGRAM** on the system or remote control to enter the programming mode.

A track number is shown and **PROGRAM** flashes.

2 Use the **PREV ¡ 1** or **NEXT 2™** on the system, (on the remote control ¡ or ™) to select your desired track number.

3 Press **PROGRAM** to confirm the track number to be stored.

The number of tracks programmed and total playing time of the programme is shown briefly, then the selected track and PROG.

4 Repeat steps **2-3** to select and store all desired tracks.

FULL is displayed if you attempt to programme more than 20 tracks.

5 To start playback of your disc programme, press **PLAY•PAUSE 2;** (on the remote control **2**).

Reviewing the programme

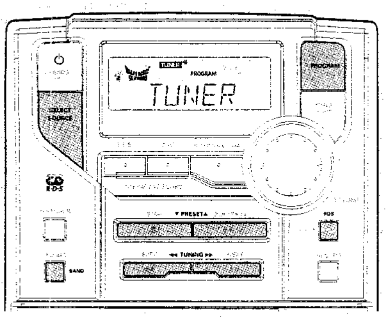
In STOP mode, press and hold down **PROGRAM** on the system or remote control, for a while until the display shows all your stored track numbers in sequence.

Erasing the programme

You can erase the programme by:

¶ pressing **STOP 9** once in the STOP mode;
¶ pressing **STOP 9** twice during playback;
¶ opening the CD compartment;

PROGRAM disappears from the display.



Tuning to radio stations

1 Select **TUNER** source.
TUNER is displayed briefly.

2 Press **BAND** once or more to select your waveband.

3 Press down on **TUNING** à or á and release button.
The radio automatically tunes to a station with sufficient reception. Display indication during automatic tuning: SEARCH.
If a FM station is received in stereo, **STEREO** is shown.

4 Repeat step **3** if necessary until you find the desired station.

¶ To tune to a weak station, press **TUNING** à or á briefly and repeatedly until you have found optimal reception.

Programming radio stations

You can store up to a total of 40 radio stations in the memory.

Automatic programming

Automatic programming will start with a chosen preset number. From this preset number upwards, former programmed radio stations will be overridden. The system will only programme stations which are not in the memory already.

1 Press **PRESET 4** or **3** (¡ or ™ on the remote control) to select the preset number where programming should start.

Note:
– *If no preset number is selected, default is preset (1) and all your presets will be overridden.*

2 Press **PROGRAM** on the system or remote control for more than 2 seconds to activate programming.
AUTO is displayed and available stations are programmed in order of waveband reception strength: FM followed by MW and LW. The last preset automatically stored will then be played.

Manual programming

1 Tune to your desired station (see Tuning to radio stations).

2 Press **PROGRAM** on the system or remote control to activate programming.
PROGRAM flashes in the display.

3 Press **PRESET 4** or **3** (¡ or ™ on the remote control) to allocate a number from 1 to 40 to this station.

4 Press **PROGRAM** again to confirm the setting.
PROGRAM disappears, the preset number and the frequency of the preset station are shown.

5 Repeat the above four steps to store other stations.

¶ You can override a preset station by storing another frequency in its place.

Tuning to preset stations

¶ Press **PRESET 4** or **3** (¡ or ™ on the remote control) until the desired preset station is displayed.

RDS *(some versions only)*

Radio Data System is a service that allows FM stations to show additional information. If you are receiving a RDS station, RDS and the station name are displayed.
When automatic programming is used, RDS stations will be programmed first.

Scrolling through different RDS information

¶ Press **RDS** briefly and repeatedly to scroll through the following information (if available):
- Station name
- Programme type such as NEWS, SPORT, POP M...
- Radio text messages
- Frequency

Note:
– *If you press RDS and the RDS signal is not available* NO RDS *is displayed.*

EON

Enhanced Other Network allows you to search for an RDS station offering a certain programme type. If EON is available, EON is shown.

Searching programme type (PTY)

PTY helps you find a desired programme type. To enable PTY, first programme RDS stations into the tuner memory (see Programming radio stations)

1 While receiving an RDS station, press **RDS** briefly until the programme type is displayed.

2 Press **PRESET 4** or **3** (¡ or ™ on the remote control) until the desired programme type is displayed.

3 Press and hold down on **TUNING** à or á (à or á on the remote control) to start searching.
The radio tunes to a RDS station broadcasting this programme type. If the programme type is not available TYPE NOT FOUND is displayed.

RDS Programme types

NO TYPE	No RDS programme type
NEWS	News services
AFFAIRS	Politics and current affairs
INFO	Special information programmes
SPORT	Sports
EDUCATE	Education and advanced training
DRAMA	Radio plays and literature
CULTURE	Culture, religion and society
SCIENCE	Science
VARIED	Entertainment programmes
POP M	Pop music
ROCK M	Rock music
MOR M	Light music
LIGHT M	Light classical music
CLASSICS	Classical music
OTHER M	Special music programmes

RDS News and Traffic Announcement (TA)

You may set up the tuner in such a way that listening to CD or tape is interrupted by the NEWS of a RDS station. This only works if the RDS station broadcasts a NEWS signal while sending the news.

1 Tune to the desired RDS station.

2 Press **NEWS/TA** once or more on the remote control to select the NEWS option.
NEWS ON, TA ON or OFF is displayed briefly.
NEWS is displayed if you have activated the NEWS or TA option. Changing listening source will not disarm the function.

Notes:
– *To avoid unwanted recordings, the NEWS announcement does not work while recording a tape.*
– *When you receive RDS news or traffic announcements during CD playback, playback will pause and you will be able to hear the news/TA. Playback resumes after the broadcast has finished. In tape mode, the tape continues playing but you will hear the news/TA only until the broadcast has finished.*
– *If you are using the RDS NEWS announcement with an EON station, the whole network is searched for the respective news.*

Disarming RDS News and Traffic Announcement

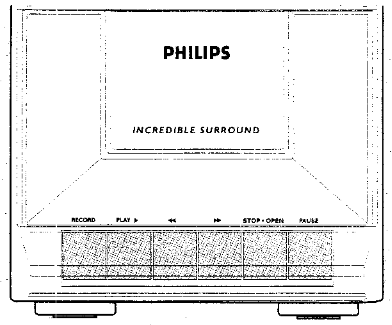
There are a number of ways to disarm the news feature:

¶ Press **NEWS/TA** on the remote control during reception of the news option.

¶ Press standby on the system or remote control.

¶ Tune to a non-RDS-station.

Tape Recorder



Tape playback

1 Select **TAPE** source.
The display shows TAPE throughout tape operation.

2 Press **STOP•OPEN** to open the tape door.

3 Insert a recorded tape and close the tape door.

¶ Load the tape with the open side downward and the full spool to the left.

4 Press **PLAY 2** to start playback.

5 To interrupt playback press **PAUSE**. To resume, press this key again.

6 By pressing à or á on the system fast winding of tape is possible in both directions.

7 To stop the tape, press **STOP•OPEN**.

¶ The keys are automatically released at the end of the tape, except if PAUSE has been activated.

Note:
– The sound source cannot be changed while playing or recording a tape.

General Information on Recording

¶ Recording is permissible insofar as copyright or other rights of third parties are not infringed.

¶ For recording, use only NORMAL (IEC type I) tapes on which the tabs have not yet been broken. This deck is not suited for recording on METAL (IEC IV) type tapes.

¶ The best recording level is set automatically. Altering the VOLUME, INCREDIBLE SURROUND, DBB or INTERACTIVE SOUND controls will not affect the recording in progress.

¶ At the very beginning and end of the tape, no recording will take place during the 7 seconds when the leader tape passes the recorder heads.

¶ To protect a tape from accidental erasure, have the tape in front of you and break out the left tab. Recording on this side is no longer possible. If, however, you wish to record over this side again, cover the tabs with a piece of adhesive tape.

Synchro Start CD recording

1 Select **CD** source.

2 Insert a disc and if desired, programme track numbers.

3 Press **STOP•OPEN** to open the tape door.

4 Insert a suitable tape into the deck and close the tape door.

5 Press **RECORD** to start recording.
Playing of the disc programme starts automatically from the beginning of the disc/ programme after 7 seconds. It is not necessary to start the CD player separately.

To select and record a particular passage within a track:

¶ Press and hold down on **PREV ¡ 1** or **NEXT 2™** (on the remote control à or á).

¶ When you recognise the passage you want, release **PREV ¡ 1** or **NEXT 2™**.

¶ To interrupt disc playback press **PLAY•PAUSE 2;** (on the remote control SIDE/;).

¶ Recording will begin from this exact point in the track when you press **RECORD**.

6 For brief interruptions during recording, press **PAUSE**. To resume recording, press **PAUSE** again.

7 To stop recording, press **STOP•OPEN**.

Recording from the Radio

1 Tune to the desired radio station (see Tuning to radio stations).

2 Press **STOP•OPEN** to open the tape door.

3 Insert a suitable tape into the deck and close the tape door.

4 Press **RECORD** to start recording.

5 For brief interruptions, press **PAUSE**. To resume recording, press **PAUSE** again.

6 To stop recording, press **STOP•OPEN**.

Recording from AUX

1 Select **AUX** source.

2 If necessary, prepare the additional appliance for recording.

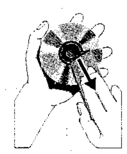
3 Press **RECORD** to start recording.

Maintenance

Cleaning the Cabinet

¶ Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs



¶ When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out.

¶ Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analogue records.

Cleaning the disc lens

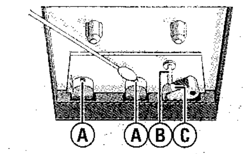
¶ After prolonged use, dirt or dust may accumulate at the disc lens. To ensure good playback quality, clean the disc lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

Cleaning the Heads and the Tape Paths

¶ To ensure good recording and playback quality, clean the heads **A**, the capstan(s) **B**, and pressure roller(s) **C** after every 50 hours of tape operation.

¶ Use a cotton swab slightly moistened with cleaning fluid or alcohol.

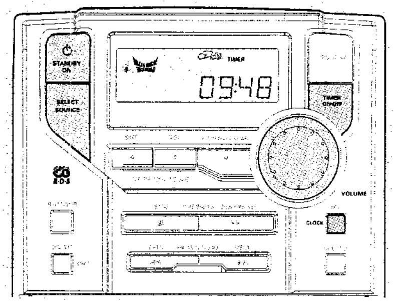
¶ You can also clean the heads by playing a cleaning tape once.



Demagnetising the heads

¶ Use a demagnetising tape available at your dealer.

Clock/Timer



Setting the clock

There are two possible methods for setting the clock: manually or automatically by using RDS.

Automatic clock setting *(RDS versions only)*

1 Tune to a RDS station (see TUNER).

2 Press **CLOCK** for more than 2 seconds.
SEARCH RDS TIME is displayed for a maximum of 90 seconds; the time is then displayed.
NO RDS TIME is displayed if no time signal has been received and you will have to set the clock manually.

Manual clock setting

1 In standby, press **CLOCK**.
The clock digits for the hours flash.

2 Turn **VOLUME** to set the hours: clockwise for hours up; anti-clockwise for hours down.

3 Press **CLOCK** again.
The clock digits for the minutes flash.

4 Turn **VOLUME** to set the minutes: clockwise for minutes up; anti-clockwise for minutes down.

5 Press **CLOCK** to confirm the time.

Setting TIMER

¶ The system can be used as an alarm clock, whereby the CD or TUNER is switched on at a set time. The clock time needs to be set first before the timer can be used.

¶ During setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.

1 In any mode, press **TIMER ON•OFF** for more than 2 seconds.

2 Turn **VOLUME** clockwise (or press **SELECT SOURCE**) to select sound source.

3 Press **TIMER ON•OFF** to confirm your desired mode.
The selected source CD or TUNER is shown. The clock digits for the hours flash.

4 Turn **VOLUME** to set the hours: clockwise for hours up; anti-clockwise for hours down.

5 Press **TIMER ON•OFF** again.
The clock digits for the minutes flash.

6 Turn **VOLUME** to set the minutes: clockwise for minutes up; anti-clockwise for minutes down.

7 Press **TIMER ON•OFF** to confirm the time.
The timer is now set and activated.

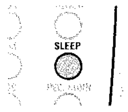
Activating and deactivating TIMER

¶ In standby or during playback, press **TIMER ON•OFF** on the system once (**TIMER** on the remote control).
Display shows TIMER if activated, and disappears if deactivated.

Clock/Timer

Activating and deactivating SLEEP

The sleep timer enables the system to switch off by itself after a set period of time. The clock time needs to be set first before the sleep timer can be used.

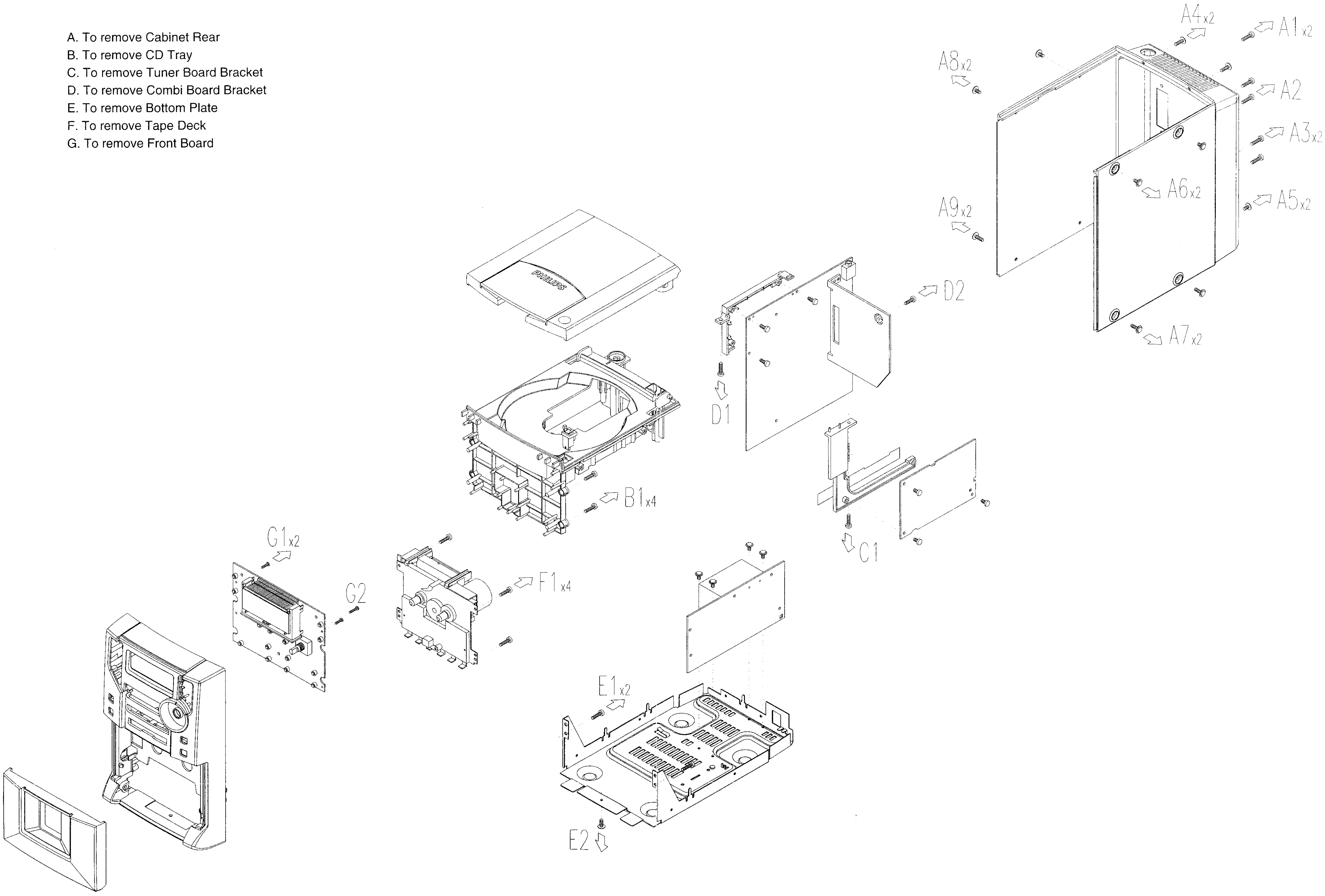


¶ Press **SLEEP** on the remote control once or more.
Display shows SLEEP and one of the sleep time options in sequence: 60, 45, 30,15, SLEEP OFF, 60... if you have selected a time. Once SLEEP is activated, SLEEP ON scrolls across the display at repeated intervals.

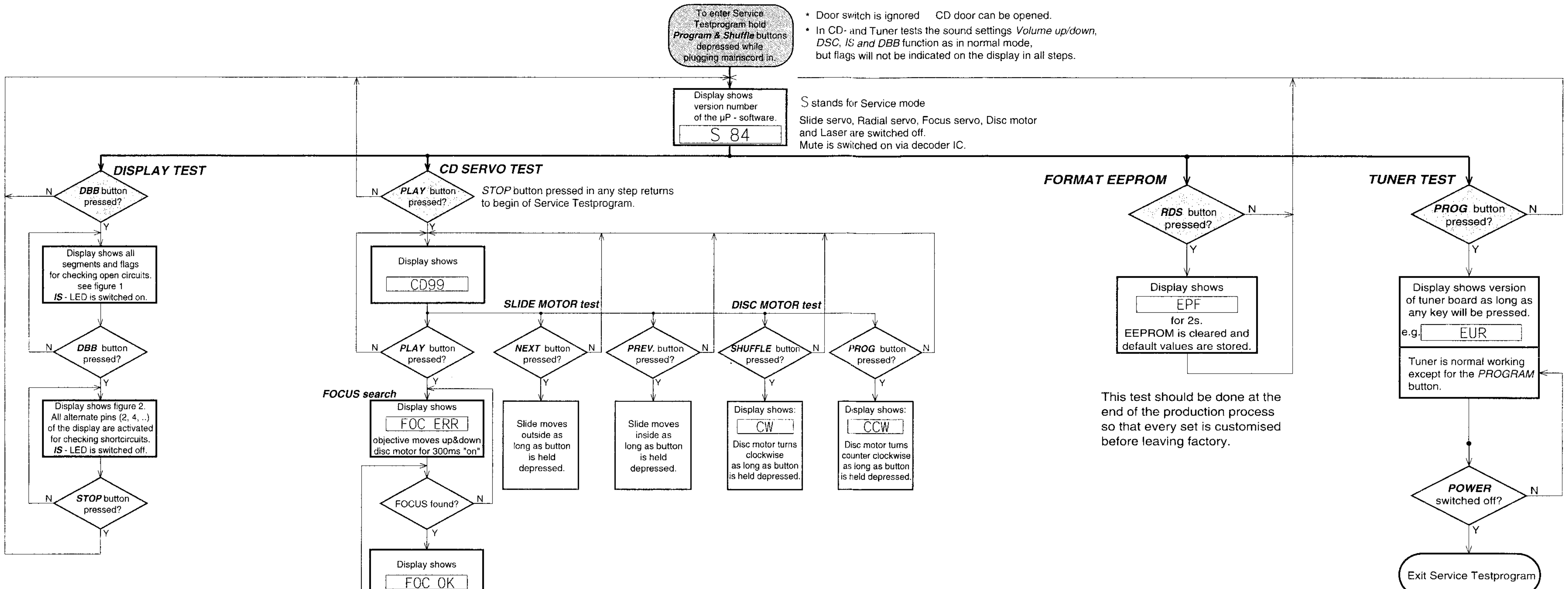
¶ To deactivate, press **SLEEP** on the remote control once or more until SLEEP OFF is shown, or press **STANDBY ON** on the system or remote control.
SLEEP OFF scrolls across the display.

DISASSEMBLY DIAGRAM

A. To remove Cabinet Rear
B. To remove CD Tray
C. To remove Tuner Board Bracket
D. To remove Combi Board Bracket
E. To remove Bottom Plate
F. To remove Tape Deck
G. To remove Front Board


A4x2
A1x2
A8x2
A2
A3x2
A6x2
A9x2
A5x2
D2
A7x2
PHILIPS
D1
B1x4
C1
G1x2
G2
F1x4
E1x2
E2

SERVICE TESTPROGRAM


To enter Service Testprogram hold Program & Shuffle buttons depressed while plugging mainscord in.
Display shows version number of the µP - software.
S 84
DISPLAY TEST
DBB button pressed?
N
Y
Display shows all segments and flags for checking open circuits. see figure 1
IS - LED is switched on.
DBB button pressed?
Display shows figure 2. All alternate pins (2, 4, ..) of the display are activated for checking shortcircuits.
IS - LED is switched off.
STOP button pressed?
CD SERVO TEST
PLAY button pressed?
Display shows
CD99
SLIDE MOTOR test
DISC MOTOR test
PLAY button pressed?
NEXT button pressed?
PREV. button pressed?
SHUFFLE button pressed?
PROG button pressed?
Slide moves outside as long as button is held depressed.
Slide moves inside as long as button is held depressed.
Display shows:
CW
Disc motor turns clockwise as long as button is held depressed.
Display shows:
CCW
Disc motor turns counter clockwise as long as button is held depressed.
FOCUS search
Display shows
FOC ERR
objective moves up&down disc motor for 300ms "on"
FOCUS found?
FORMAT EEPROM
RDS button pressed?
Display shows
EPF
for 2s.
EEPROM is cleared and default values are stored.
TUNER TEST
PROG button pressed?
Display shows version of tuner board as long as any key will be pressed.
e.g.
EUR
Tuner is normal working except for the PROGRAM button.
POWER switched off?
Exit Service Testprogram

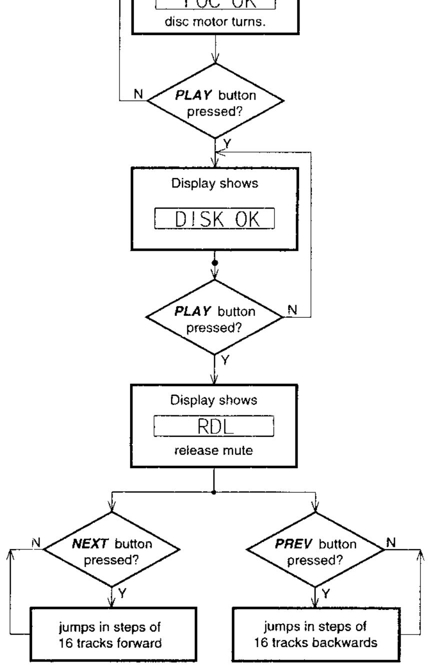
- Door switch is ignored CD door can be opened.
- In CD- and Tuner tests the sound settings *Volume up/down, DSC, IS and DBB* function as in normal mode, but flags will not be indicated on the display in all steps.

S stands for Service mode

Slide servo, Radial servo, Focus servo, Disc motor and Laser are switched off.
Mute is switched on via decoder IC.

STOP button pressed in any step returns to begin of Service Testprogram.

This test should be done at the end of the production process so that every set is customised before leaving factory.


Display shows
FOC OK
disc motor turns.
PLAY button pressed?
N
Y
Display shows
DISK OK
PLAY button pressed?
Display shows
RDL
release mute
NEXT button pressed?
PREV button pressed?
jumps in steps of 16 tracks forward
jumps in steps of 16 tracks backwards

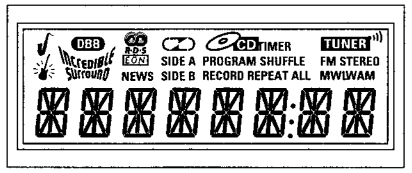

DBB
INCREDIBLE SURROUND
RDS
EON
NEWS
SIDE A
SIDE B
PROGRAM
SHUFFLE
RECORD
REPEAT ALL
CD
TIMER
TUNER
FM STEREO
MWLWAM

fig. 1

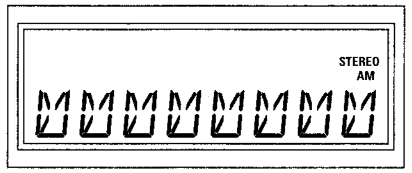


fig. 2

TUNER VERSIONS

	EUR	USA	OSE
REGION & SET VERSIONS	***EUROPE*** ***FM/MW*** /22/25	***USA*** ***FM/MW*** /37	***OVERSEAS*** ***FM/MW*** 1)Grid switchable 100/10kHz - 50/9kHz /21/21M/30

table 2

CD ERROR CODES

Error number	*Error description*	*Error type*
E1000	**Focus error** Triggered when the focus is lost during playing the CD.	W
E1001	**Radial error** Triggered when the radial servo is not on track for a certain time during playing the CD.	W
E1002	**Slide-in error** The sledge did not reach its inner position (innerswitch is closed) before approximately 6 seconds have pressed by - innerswitch or sledgemotor problem.	W
E1003	**Slide-out error** The sledge did not come out of its inner position (innerswitch is open) before approximately 300ms have passed by - innerswitch or sledgemotor problem.	W
E1005	**Jump error** Triggered when the jump destination could not be found within a certain time.	W
E1006	**Subcode error** No valid subcode for a certain time during play.	W
E1007	**PLL error** The Phase-Lock-Loop could not lock within a certain time.	W
E1008	**Turntable motor error** Generated when the CD could not reach 75% of speed during start-up within a certain time. Discmotor problem.	W
E1020	**Focus search error** The focus point has not been found within a certain time.	F

table 1

Error type: W = Warning set continues operation, message remains on the display until next error occurs or any key is pressed.

F = Fatal Error set stops operation, message remains on the display.

---

[1] To toggle frequency grid press ***SHUFFLE*** button for more than 5s in normal tuner mode (**not** in service testmode).

Display will show either GRID 9 or GRID 10 for 2 s.

Abbreviations and Pin-description of CD Ics

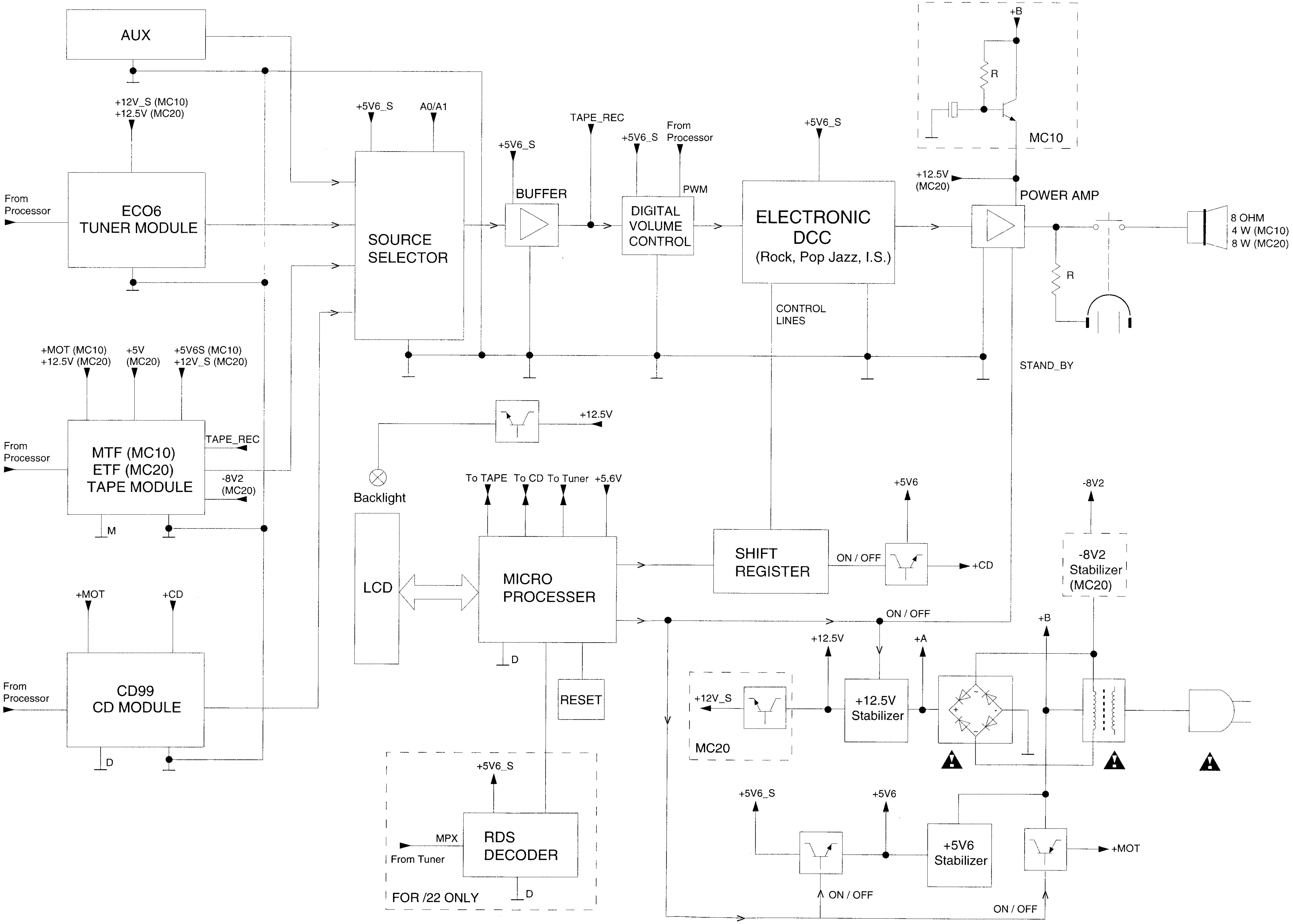
SERVO PROCESSOR SAA7325H

SYMBOL	PIN	DESCRIPTION
HFREF	1	comparator common mode input
HFIN	2	comparator signal input
ISLICE	3	current feedback output from data slicer
V_{SSA1}	4(1)	analog ground 1
V_{DDA1}	5(1)	analog supply voltage 1
I_{ref}	6	reference current output pin
V_{RIN}	7	reference voltage for servo ADC's
D1	8	unipolar current input (central diode signal input)
D2	9	unipolar current input (central diode signal input)
D3	10	unipolar current input (central diode signal input)
D4	11	unipolar current input (central diode signal input)
R1	12	unipolar current input (satellite diode signal input)
R2	13	unipolar current input (satellite diode signal input)
V_{SSA2}	14(1)	analog ground 2
CROUT	15	crystal/resonator output
CRIN	16	crystal/resonator input
V_{DDA2}	17(1)	analog supply voltage 2
LN	18	DAC left channel differential output - negative
LP	19	DAC left channel differential output - positive
V_{neg}	20	DAC negative reference input
V_{pos}	21	DAC positive reference input
RN	22	DAC right channel differential output - negative
RP	23	DAC right channel differential output - positive
SELPLL	24	selects whether internal clock multiplier PLL is used
TEST1	25	test control input 1; this pin should be tied LOW
CL16	26	16.9344 MHz system clock output
DATA	27	serial d4(1)ata output (3-state)
WCLK	28	word clock output (3-state)
SCLK	29	serial bit clock output (3-state)
EF	30	C2 error flag output (3-state)
TEST2	31	test control input 2; this pin should be tied LOW
KILL	32	kill output (programmable; open-drain)
V_{SSD1}	33(1)	digital ground 2
V2/V3	34	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
WCLI	35	word clock iutput (for data loopback to DAC)
SDI	36	serial data input (for data loopback to DAC)
SCLI	37	serial bit clock input (for data loopback to DAC)
$\overline{\text{RESET}}$	38	power-on reset input (active LOW)
SDA	39	microcontroller interface data I/O line (open-drain output)
SCL	40	microcontroller interface clock line input
RAB	41	microcontroller interface R/$\overline{W}$ and load control line input (4-wire bus mode)
SILD	42	microcontroller interface $\overline{R}$/W and load control line input (4-wire bus mode)
STATUS	43	servo interrupt request line/decoder status register output (open-drain)
TEST3	44	test control input 3; this pin should be tied LOW
RCK	45	subcode clock input
SUB	46	P-to-W subcode bits output (3-state)
SFSY	47	subcode frame sync output (3-state)
SBSY	48	subcode block sync output (3-state)
CL11/4	49	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
V_{SSD2}	50(1)	digital ground 3
DOBM	51	bi-phase mark output (externally buffered; 3-state)
$V_{DDD1(P)}$	52(1)	digital supply voltage 2 for periphery
CFLG	53	correction flag output (open-drain)
RA	54	radial actuator output
FO	55	focus actuator output
SL	56	sledge control output
$V_{DDD2(C)}$	57(1)	digital supply voltage 3 for core
V_{SSD3}	58(1)	digital ground 4
MOTO1	59	motor output 1; versatile (3-state)
MOTO2	60	motor output 2; versatile (3-state)
V4	61	versatile output pin 4
V5	62	versatile output pin 5
V1	63	versatile intput pin 1
LDON	64	laser drive on output (open-drain)

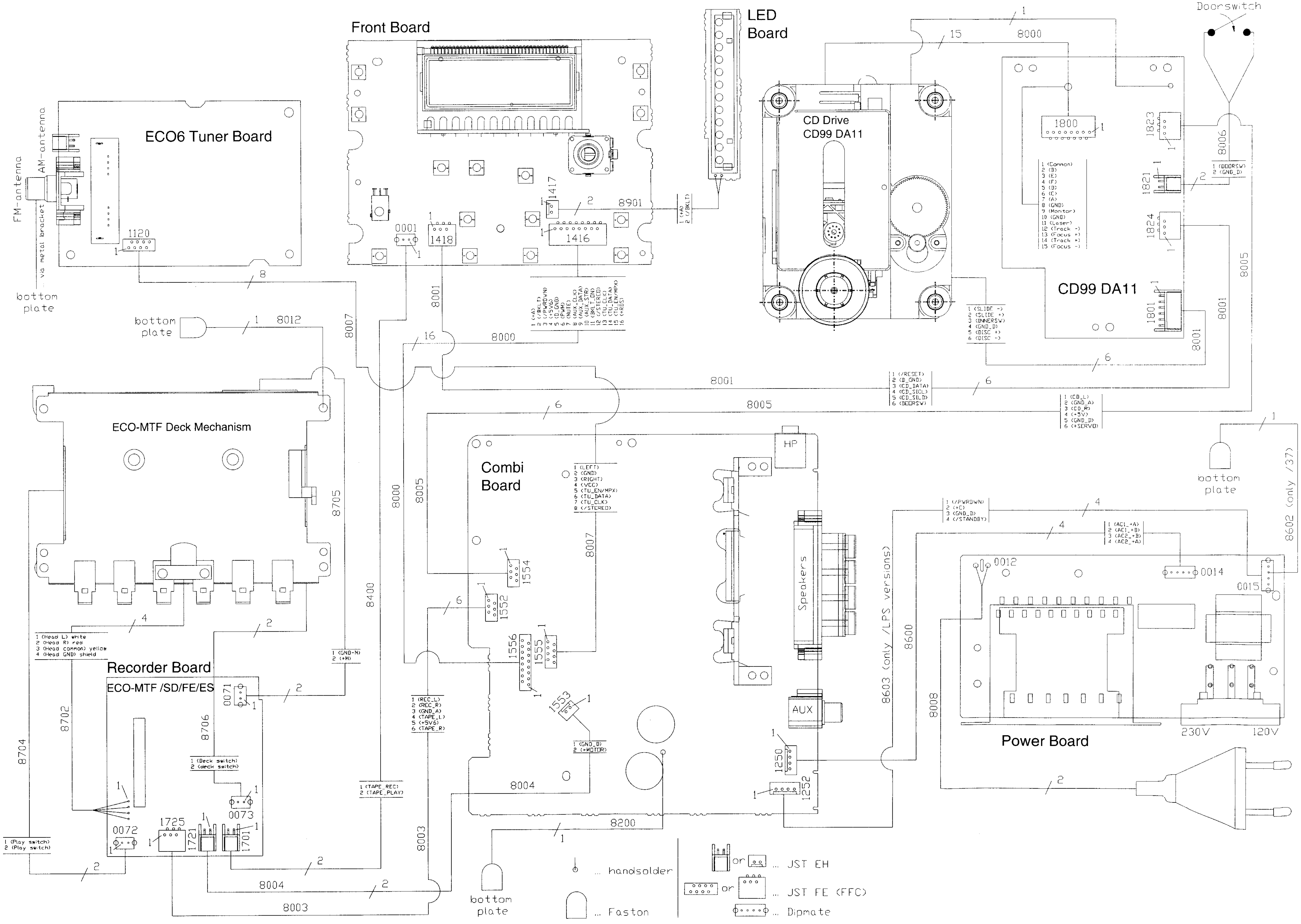
4-3
Abbreviations and Pin-description of CD Ics
SERVO PROCESSOR SAA7325H

Note : All supply pins must be connected to the same external power supply voltage.

BLOCK DIAGRAM

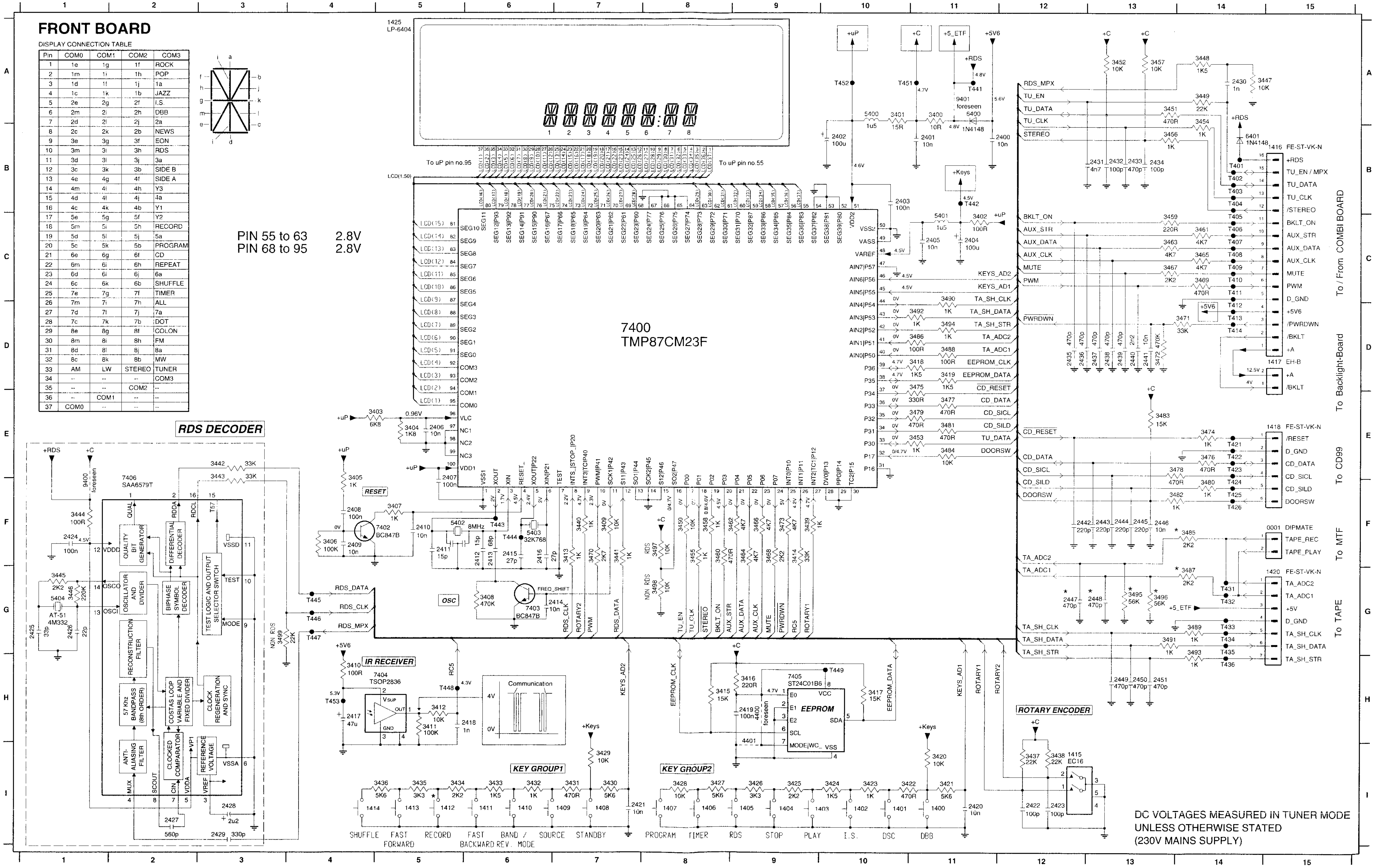

AUX
+12V_S (MC10)
+12.5V (MC20)
From Processor
ECO6
TUNER MODULE
+5V6_S
A0/A1
SOURCE SELECTOR
+5V6_S
BUFFER
TAPE_REC
+5V6_S
From Processor
PWM
DIGITAL VOLUME CONTROL
+5V6_S
ELECTRONIC DCC
(Rock, Pop Jazz, I.S.)
CONTROL LINES
+B
R
MC10
+12.5V
(MC20)
POWER AMP
R
8 OHM
4 W (MC10)
8 W (MC20)
STAND_BY
+MOT (MC10)
+12.5V (MC20)
+5V
(MC20)
+5V6S (MC10)
+12V_S (MC20)
From Processor
MTF (MC10)
ETF (MC20)
TAPE MODULE
TAPE_REC
-8V2
(MC20)
M
+12.5V
Backlight
To TAPE
To CD
To Tuner
+5.6V
LCD
MICRO PROCESSER
D
RESET
SHIFT REGISTER
ON / OFF
+5V6
+CD
-8V2
-8V2 Stabilizer (MC20)
ON / OFF
+B
+MOT
+CD
From Processor
CD99
CD MODULE
D
+5V6_S
MPX
From Tuner
RDS DECODER
FOR /22 ONLY
D
+12V_S
MC20
+12.5V
+12.5V Stabilizer
+A
+5V6_S
+5V6
+5V6 Stabilizer
ON / OFF
ON / OFF
+MOT

WIRING DIAGRAM


Front Board
LED Board
Doorswitch
ECO6 Tuner Board
CD Drive
CD99 DA11
FM-antenna
AM-antenna
via metal bracket
bottom plate
1120
0001
1418
1417
1416
8901
1 (+A)
2 (/BKLT)
1800
1823
1821
1824
1801
8006
1 (DOORSW)
2 (GND_D)
1 (Common)
2 (B)
3 (E)
4 (F)
5 (D)
6 (C)
7 (A)
8 (GND)
9 (Monitor)
10 (GND)
11 (Laser)
12 (Track -)
13 (Focus +)
14 (Track +)
15 (Focus -)
CD99 DA11
8005
8001
1 (SLIDE -)
2 (SLIDE +)
3 (INNERSW)
4 (GND_D)
5 (DISC +)
6 (DISC -)
8000
15
8
8012
8007
8001
16
8000
1 (+A)
2 (/BKLT)
3 (/PWRDWN)
4 (+5V6)
5 (D_GND)
6 (PWM)
7 (MUTE)
8 (AUX_CLK)
9 (AUX_DATA)
10 (AUX_STR)
11 (BKLT_ON)
12 (/STERED)
13 (TU_CLK)
14 (TU_DATA)
15 (TU_EN/MPX)
16 (+RDS)
8001
1 (/RESET)
2 (D_GND)
3 (CD_DATA)
4 (CD_SICL)
5 (CD_SILD)
6 (DOORSW)
8005
1 (CD_L)
2 (GND_A)
3 (CD_R)
4 (+5V)
5 (GND_D)
6 (+SERVO)
ECO-MTF Deck Mechanism
8705
8000
8005
Combi Board
1 (LEFT)
2 (GND)
3 (RIGHT)
4 (VCC)
5 (TU_EN/MPX)
6 (TU_DATA)
7 (TU_CLK)
8 (/STEREO)
8007
HP
Speakers
AUX
1554
1552
1556
1555
1553
1 (GND_D)
2 (+MOTOR)
1250
1252
8004
8200
1 (/PWRDWN)
2 (+C)
3 (GND_D)
4 (/STANDBY)
1 (AC1_+A)
2 (AC1_+B)
3 (AC2_+B)
4 (AC2_+A)
8602 (only /37)
8603 (only /LPS versions)
8600
8008
0012
0014
0015
Power Board
230V
120V
8400
1 (Head L) white
2 (Head R) red
3 (Head common) yellow
4 (Head GND) shield
1 (GND-M)
2 (+M)
Recorder Board
ECO-MTF /SD/FE/ES
0071
8702
8706
8704
1 (Deck switch)
2 (deck switch)
1 (TAPE_REC)
2 (TAPE_PLAY)
1 (REC_L)
2 (REC_R)
3 (GND_A)
4 (TAPE_L)
5 (+5V6)
6 (TAPE_R)
0073
0072
1725
1721
1701
1 (Play switch)
2 (Play switch)
8004
8003
8003
... handsolder
... Faston
or ... JST EH
or ... JST FE (FFC)
... Dipmate

FRONT BOARD - CIRCUIT DIAGRAM

0001	F15
1400	I11
1401	I10
1402	I10
1403	I9
1404	I9
1405	I8
1406	I8
1407	I8
1408	I7
1409	I6
1410	I6
1411	I6
1412	I5
1413	I5
1414	I4
1415	I12
1416	B15
1417	D15
1418	E15
1420	G15
1425	A5
2400	B11
2401	B11
2402	B9
2403	B10
2404	C11
2405	C11
2406	E5
2407	F5
2408	F4
2409	F4
2410	F5
2411	F5
2412	F6
2413	F6
2414	G6
2415	F6
2416	F6
2417	H4
2418	H5
2419	H9
2420	I11
2421	I7
2422	I12
2423	I12
2424	F1
2425	G1
2426	G1
2427	I2
2428	I3
2429	I3
2430	A14
2431	B12
2432	B13
2433	B13
2434	B13
2435	D12
2436	D12
2437	D13
2438	D13
2439	D13
2440	D13
2441	D13
2442	F12
2443	F13
2444	F13
2445	F13
2446	F13
2447	G12
2448	G13
2449	H13
2450	H13
2451	H13
3400	A11
3401	A10
3402	C11
3403	E5
3404	E5
3405	F4
3406	F4
3407	F5
3408	G6
3409	F7
3410	H4
3411	H5
3412	H5
3413	F7
3414	F9
3415	H8
3416	H9
3417	H10
3418	D11
3419	D11
3420	I11
3421	I11
3422	I11
3423	I10
3424	I10
3425	I9
3426	I9
3427	I8
3428	I8
3429	I7
3430	I7
3431	I7
3432	I6
3433	I6
3434	I5
3435	I5
3436	I5
3437	I12
3438	I12
3439	F9
3440	F7
3441	F7
3442	E3
3443	F3
3444	F1
3445	G1
3446	G1
3447	A14
3448	A14
3449	A14
3450	F8
3451	A13
3452	A13
3453	E11
3454	A14
3455	F8
3456	B13
3457	A13
3458	F8
3459	C13
3460	F8
3461	C14
3462	F9
3463	C13
3464	F9
3465	C14
3466	F9
3467	C13
3468	F9
3469	C14
3470	F7
3471	D14
3472	D13
3473	F9
3474	E14
3475	D11
3476	E14
3477	E11
3478	E14
3479	E11
3480	F14
3481	E11
3482	F14
3483	E13
3484	E11
3485	F14
3486	D11
3487	G14
3488	D11
3489	G14
3490	C11
3491	G13
3492	D11
3493	G14
3494	D11
3495	G13
3496	G13
3497	F8
3498	G8
3499	G3
4400	H9
4401	I9
5400	A10
5401	C11
5402	F5
5403	F6
5404	G1
6400	A11
6401	B14
7400	D8
7402	F5
7403	G6
7404	H5
7405	H9
7406	F2
9400	F1
9401	A11
T401	B14
T402	B14
T403	B14
T404	B14
T405	C14
T406	C14
T407	C14
T408	C14
T409	C14
T410	C14
T411	C14
T412	D14
T413	D14
T414	D14
T421	E14
T422	E14
T423	E14
T424	F14
T425	F14
T426	F14
T431	G14
T432	G14
T433	G14
T434	G14
T435	G14
T436	H14
T441	A11
T442	B11
T443	F6
T444	F6
T445	G4
T446	G4
T447	G4
T448	H5
T449	H10
T451	A10
T452	A10
T453	H4


1425
LP-6404
To uP pin no.95
To uP pin no.55
7400
TMP87CM23F
RDS DECODER
7406
SAA6579T
QUALITY BIT GENERATOR
DIFFERENTIAL DECODER
OSCILLATOR AND DIVIDER
BIPHASE SYMBOL DECODER
TEST LOGIC AND OUTPUT SELECTOR SWITCH
RECONSTRUCTION FILTER
57 Khz BANDPASS (8th ORDER)
COSTAS LOOP VARIABLE AND FIXED DIVIDER
CLOCK REGENERATION AND SYNC
ANTI-ALIASING FILTER
CLOCKED COMPARATOR
REFERENCE VOLTAGE
RESET
OSC
IR RECEIVER
7404
TSOP2836
Communication
EEPROM
7405
ST24C01B6
KEY GROUP1
KEY GROUP2
ROTARY ENCODER
SHUFFLE
FAST FORWARD
RECORD
FAST BACKWARD
BAND / REV. MODE
SOURCE
STANDBY
PROGRAM
TIMER
RDS
STOP
PLAY
I.S.
DSC
DBB
To / From COMBI BOARD
To Backlight-Board
To CD99
To MTF
To TAPE
1416 FE-ST-VK-N
1417 EH-B
1418 FE-ST-VK-N
1420 FE-ST-VK-N
0001 DIPMATE

FRONT BOARD

DISPLAY CONNECTION TABLE

Pin	COM0	COM1	COM2	COM3
1	1e	1g	1f	ROCK
2	1m	1i	1h	POP
3	1d	1l	1j	1a
4	1c	1k	1b	JAZZ
5	2e	2g	2f	I.S.
6	2m	2i	2h	DBB
7	2d	2l	2j	2a
8	2c	2k	2b	NEWS
9	3e	3g	3f	EON
10	3m	3i	3h	RDS
11	3d	3l	3j	3a
12	3c	3k	3b	SIDE B
13	4e	4g	4f	SIDE A
14	4m	4i	4h	Y3
15	4d	4l	4j	4a
16	4c	4k	4b	Y1
17	5e	5g	5f	Y2
18	5m	5i	5h	RECORD
19	5d	5l	5j	5a
20	5c	5k	5b	PROGRAM
21	6e	6g	6f	CD
22	6m	6i	6h	REPEAT
23	6d	6l	6j	6a
24	6c	6k	6b	SHUFFLE
25	7e	7g	7f	TIMER
26	7m	7i	7h	ALL
27	7d	7l	7j	7a
28	7c	7k	7b	DOT
29	8e	8g	8f	COLON
30	8m	8i	8h	FM
31	8d	8l	8j	8a
32	8c	8k	8b	MW
33	AM	LW	STEREO	TUNER
34	--	--	--	COM3
35	--	--	COM2	--
36	--	COM1	--	--
37	COM0	--	--	--

PIN 55 to 63 2.8V
PIN 68 to 95 2.8V

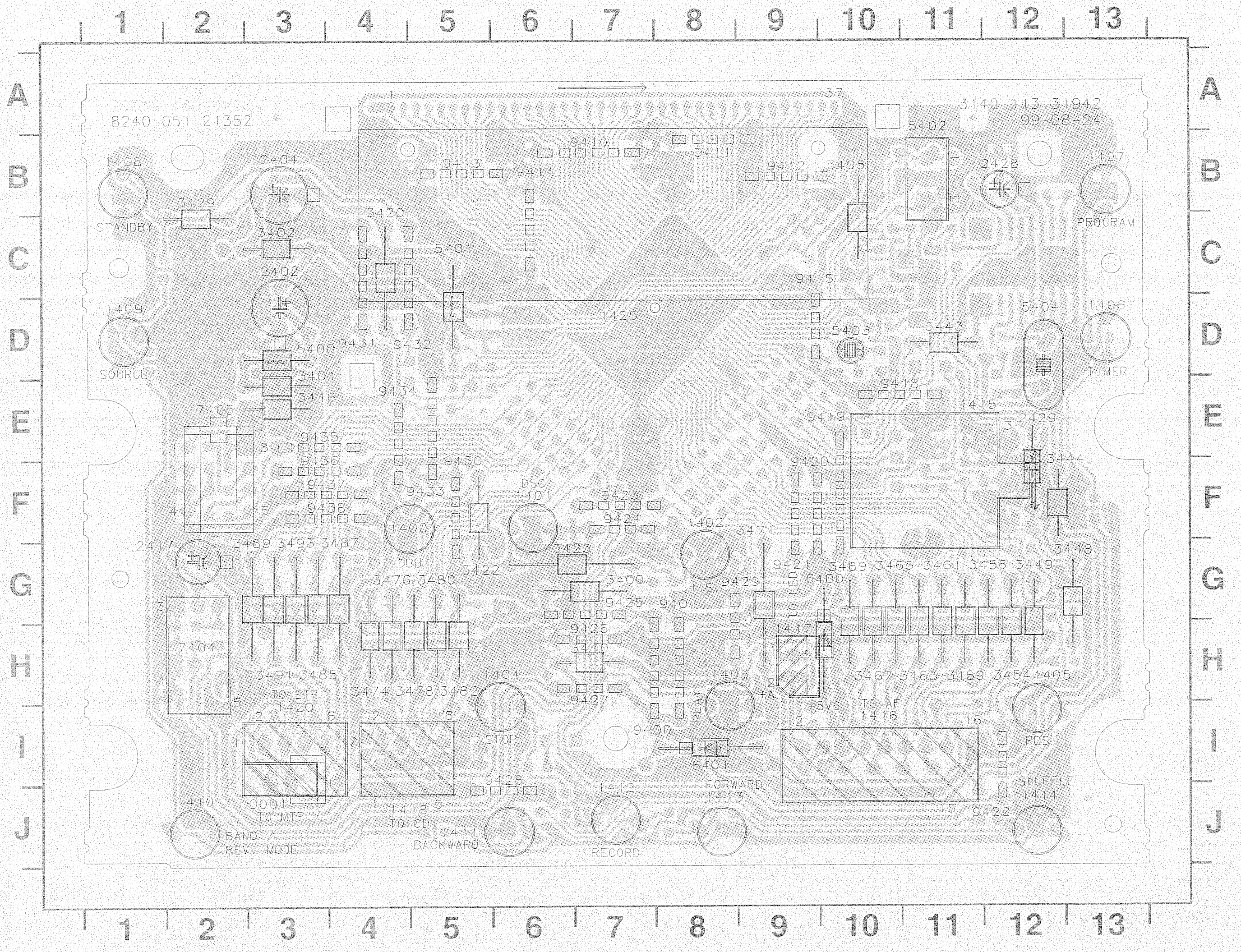
DC VOLTAGES MEASURED IN TUNER MODE
UNLESS OTHERWISE STATED
(230V MAINS SUPPLY)

*

ITEM MODEL	1412	2447	2448	3485	3487	3495	3496
MC10	✗	✗	✗	2K2	2K2	56K	56K
MC20	✓	470p	470p	3K9	3K9	✗	150K

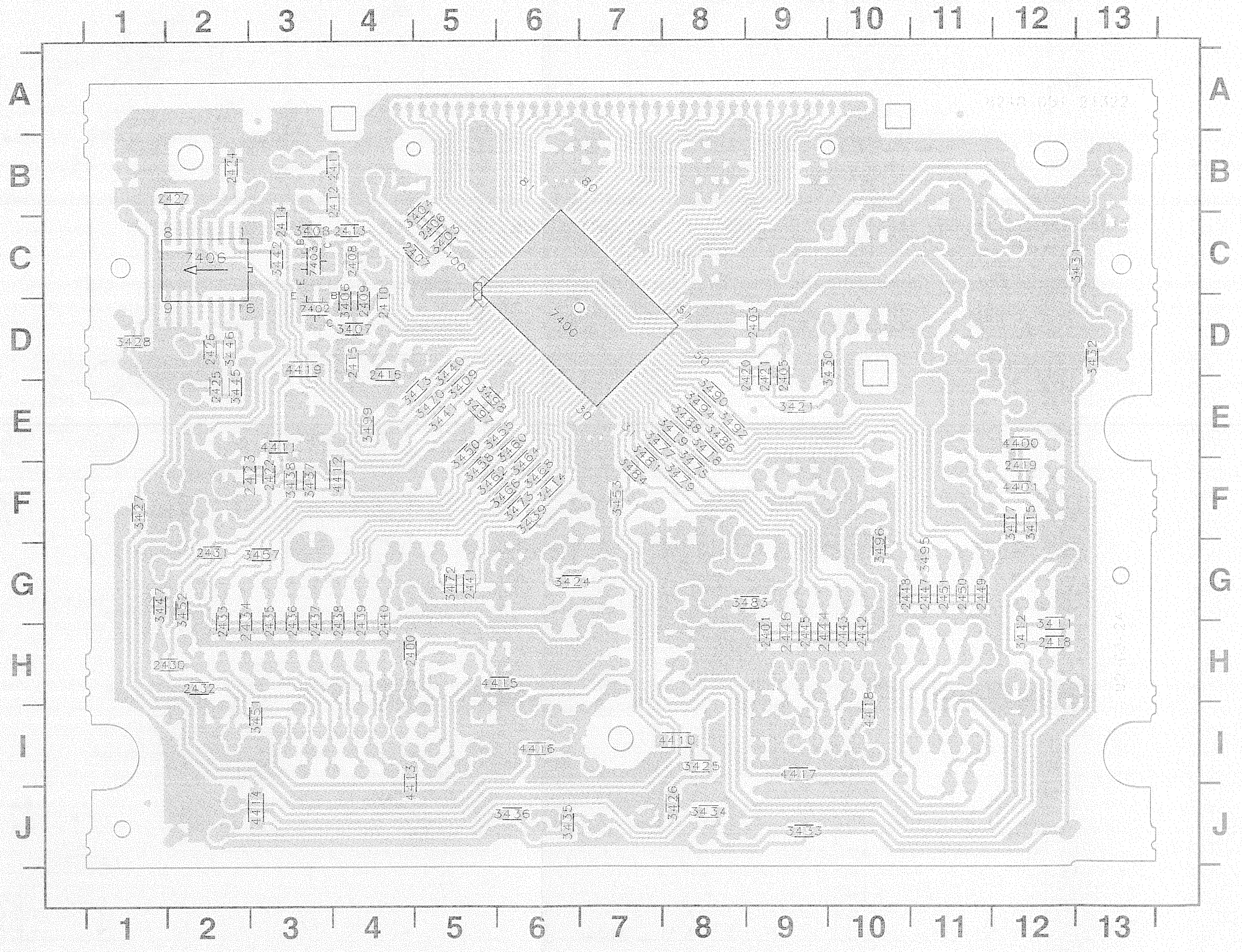
FRONT BOARD - LAYOUT DIAGRAM

0001	J3	1408	B1	1417	H9	3400	G7	3429	B2	3463	H11	3482	H5	5403	D10	9411	B8	9422	J12	9431	D4
1400	F4	1409	D1	1418	J4	3401	D3	3443	D11	3465	G10	3485	H3	5404	D12	9412	B9	9423	F7	9432	D5
1401	F6	1410	J2	1420	I3	3402	C3	3444	F12	3467	H10	3487	G4	6400	G10	9413	B5	9424	F7	9433	F5
1402	F8	1411	J5	1425	D7	3405	B10	3448	G13	3469	G10	3489	G3	6401	I8	9414	B6	9425	G7	9434	E4
1403	H8	1412	J7	2402	C3	3410	H7	3449	G12	3471	F9	3491	H3	7404	H2	9415	C9	9426	H7	9435	E3
1404	H6	1413	J8	2404	B3	3416	E3	3454	H12	3474	H4	3493	G3	7405	E2	9418	E10	9427	H7	9436	E3
1405	H12	1414	J12	2417	G1	3420	B4	3456	G12	3476	G4	5400	D3	9400	I7	9419	E10	9428	I6	9437	F3
1406	D13	1415	E11	2428	B12	3422	G5	3459	H11	3478	H5	5401	C5	9401	G8	9420	F9	9429	G9	9438	F3
1407	B13	1416	I10	2429	E12	3423	G6	3461	G11	3480	G5	5402	A11	9410	B7	9421	G9	9430	F5		



8240 051 21352
3140 113 31942
99-08-24
STANDBY
PROGRAM
SOURCE
TIMER
DBB
PSC
TO PTF
1420
TO CD
1418
0001
TO MTF
BAND / REV. MODE
BACKWARD
RECORD
FORWARD
1413
STOP
PLAY
SHUFFLE
1414
POS
TO AF
1416
TO LCD
+5V6

2400	H4	2414	C3	2427	B2	2441	G5	3404	B5	3419	E8	3435	J6	3451	I3	3472	G5	3494	E8	4414	J3
2401	H9	2415	D4	2430	H2	2442	H10	3406	D4	3421	E9	3436	J6	3452	G2	3473	F6	3495	G11	4415	H6
2403	D9	2416	D4	2431	G2	2443	H10	3407	D4	3424	G6	3437	F3	3453	F7	3475	F8	3496	G10	4416	I6
2405	D9	2418	H12	2432	H2	2444	H9	3408	C3	3425	I8	3438	F3	3455	E6	3477	E7	3497	E5	4417	I9
2406	C5	2419	F12	2433	G2	2445	H9	3409	E5	3426	J8	3439	F6	3457	G3	3479	F8	3498	E5	4418	I10
2407	C5	2420	D8	2434	G2	2446	H9	3411	H12	3427	F1	3440	D5	3458	F5	3481	E7	3499	E4	4419	D3
2408	C4	2421	D9	2435	G3	2447	G11	3412	H12	3428	D1	3441	E5	3460	E6	3483	G9	4400	E12	7400	D6
2409	D4	2422	F3	2436	G3	2448	G10	3413	E5	3430	D9	3442	C3	3462	F5	3484	F7	4401	F12	7402	D3
2410	D4	2423	F2	2437	G3	2449	G11	3414	F6	3431	C12	3445	E2	3464	F6	3486	E8	4410	I8	7403	C3
2411	B4	2424	B2	2438	G4	2450	G11	3415	F12	3432	D13	3446	D2	3466	F6	3488	E8	4411	E3	7406	C2
2412	B4	2425	E2	2439	G4	2451	G11	3417	F12	3433	J9	3447	G1	3468	F6	3490	E8	4412	F4		
2413	C4	2426	D2	2440	G4	3403	C5	3418	E8	3434	J8	3450	E5	3470	E5	3492	E8	4413	I4		

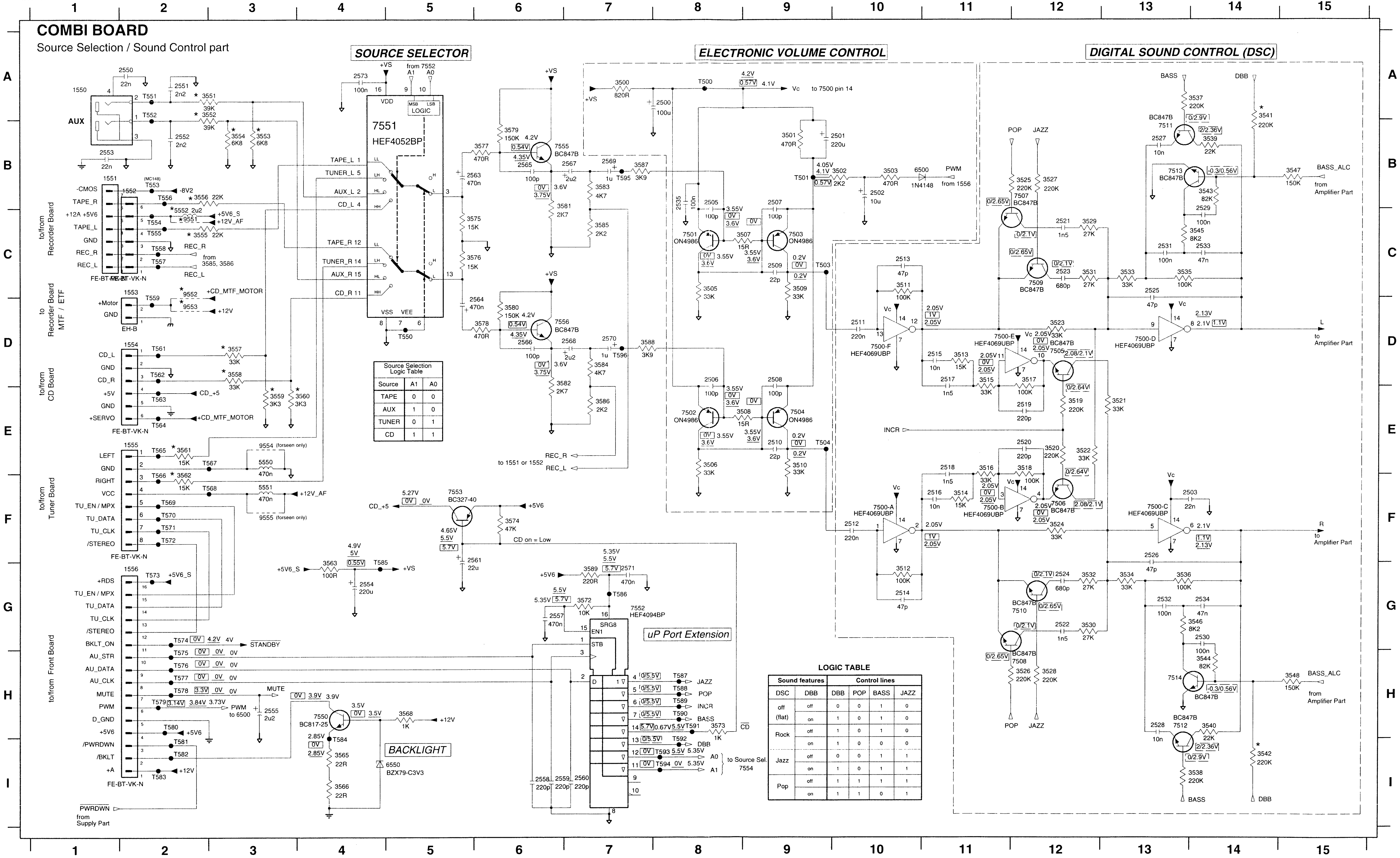


COMBI BOARD (Part 1) - CIRCUIT DIAGARM

1550 A1
1551 B1
1552 B2
1553 C2
1554 D2
1555 E2
1556 G2
2500 A8
2501 B10
2502 B10
2503 F14
2505 B8
2506 D8
2507 B9
2508 D9
2509 C9
2510 E9
2511 D10
2512 F10
2513 C10
2514 G10
2515 D11
2516 F11
2517 D11
2518 E11
2519 E12
2520 E12
2521 C12
2522 G12
2523 C12
2524 G12
2525 C13
2526 F13
2527 B13
2528 H13
2529 C14
2530 G14
2531 C13
2532 G13
2533 C14
2534 G14
2535 B8
2550 A2
2551 A2
2552 B2
2553 B1
2554 G4
2555 H3
2557 G6
2558 I6
2559 I6
2560 I7
2561 F6
2563 B5
2564 C6
2565 B6
2566 D6
2567 B7
2568 D7
2569 B7
2570 D7
2571 G7
2573 A4
3500 A7
3501 B9
3502 B10
3503 B10
3505 C8
3506 E8
3507 C9
3508 E9
3509 C9
3510 E9
3511 C10
3512 G10
3513 D11
3514 F11
3515 D11
3516 E11
3517 D12
3518 E12
3519 E12
3520 E12
3521 E13
3522 E12
3523 D12
3524 F12
3525 B12
3526 H12
3527 B12
3528 H12
3529 C12
3530 G12
3531 C12
3532 G12
3533 C13
3534 G13
3535 C13
3536 G13
3537 A14
3538 I14
3539 B14
3540 H14
3541 A14
3542 I14
3543 B14
3544 H14
3545 C14
3546 G14
3547 B15
3548 H15
3551 A3
3552 A3
3553 B3
3554 B3
3555 C2
3556 B2
3557 D3
3558 D3
3559 E3
3560 E4
3561 E2
3562 F2
3563 G4
3565 I4
3566 I4
3568 H5
3572 G7
3573 H8
3574 F6
3575 C5
3576 C5
3577 B6
3578 D6
3579 B6
3580 D6
3581 B7
3582 D6
3583 B7
3584 D7
3585 C7
3586 E7
3587 B7
3588 D7
3589 G7
5550 E3
5551 F3
5552 C2
6500 B10
6550 I5
7500-A F10
7500-B F11
7500-C F13
7500-D D13
7500-E D11
7500-F D10
7501 C8
7502 E8
7503 C9
7504 E9
7505 D12
7506 F12
7507 B12
7508 H12
7509 C12
7510 G12
7511 B13
7512 H13
7513 B13
7514 H13
7550 H4
7551 B4
7552 G7
7553 F5
7555 B6
7556 D6
9551 C2
9552 C2
9553 D2
9554 E3
9555 F3
T500 A8
T501 B9
T503 C9
T504 E9
T550 D5
T551 A2
T552 A2
T553 B2
T554 C2
T555 C2
T556 B2
T557 C2
T558 C2
T559 D2
T561 D2
T562 D2
T563 E2
T564 E2
T565 E2
T566 F2
T567 E3
T568 F3
T569 F2
T570 F2
T571 F2
T572 F2
T573 G2
T574 G2
T575 H2
T576 H2
T577 H2
T578 H2
T579 H2
T580 H2
T581 I2
T582 I2
T583 I2
T584 I4
T585 G4
T586 G7
T587 H8
T588 H8
T589 H8
T590 H8
T591 H8
T592 I8
T593 I8
T594 I8
T595 B7
T596 D7

COMBI BOARD

Source Selection / Sound Control part


SOURCE SELECTOR
ELECTRONIC VOLUME CONTROL
DIGITAL SOUND CONTROL (DSC)
AUX
to/from Recorder Board
to Recorder Board MTF / ETF
to/from CD Board
to/from Tuner Board
to/from Front Board
FE-BT-VK-N
EH-B
7551
HEF4052BP
LOGIC
MSB
LSB
VDD
VSS
VEE
TAPE_L 1
TUNER_L 5
AUX_L 2
CD_L 4
TAPE_R 12
TUNER_R 14
AUX_R 15
CD_R 11
7555 BC847B
7556 BC847B
7501 ON4986
7502 ON4986
7503 ON4986
7504 ON4986
7500-A HEF4069UBP
7500-B HEF4069UBP
7500-C HEF4069UBP
7500-D HEF4069UBP
7500-E HEF4069UBP
7500-F HEF4069UBP
7553 BC327-40
7550 BC817-25
7552 HEF4094BP
SRG8
uP Port Extension
BACKLIGHT
6550 BZX79-C3V3
6500 1N4148
to 7500 pin 14
PWM from 1556
BASS_ALC from Amplifier Part
L to Amplifier Part
R to Amplifier Part
REC_R
REC_L
to 1551 or 1552
CD on = Low
INCR
POP
JAZZ
BASS
DBB
STANDBY
MUTE
PWRDWN from Supply Part
to Source Sel. 7554

Source Selection Logic Table

Source	A1	A0
TAPE	0	0
AUX	1	0
TUNER	0	1
CD	1	1

LOGIC TABLE

Sound features		Control lines			
DSC	DBB	DBB	POP	BASS	JAZZ
off (flat)	off	0	0	1	0
	on	1	0	1	0
Rock	off	1	0	1	0
	on	1	0	0	0
Jazz	off	0	0	1	1
	on	1	0	1	1
Pop	off	1	1	1	1
	on	1	1	0	1

*

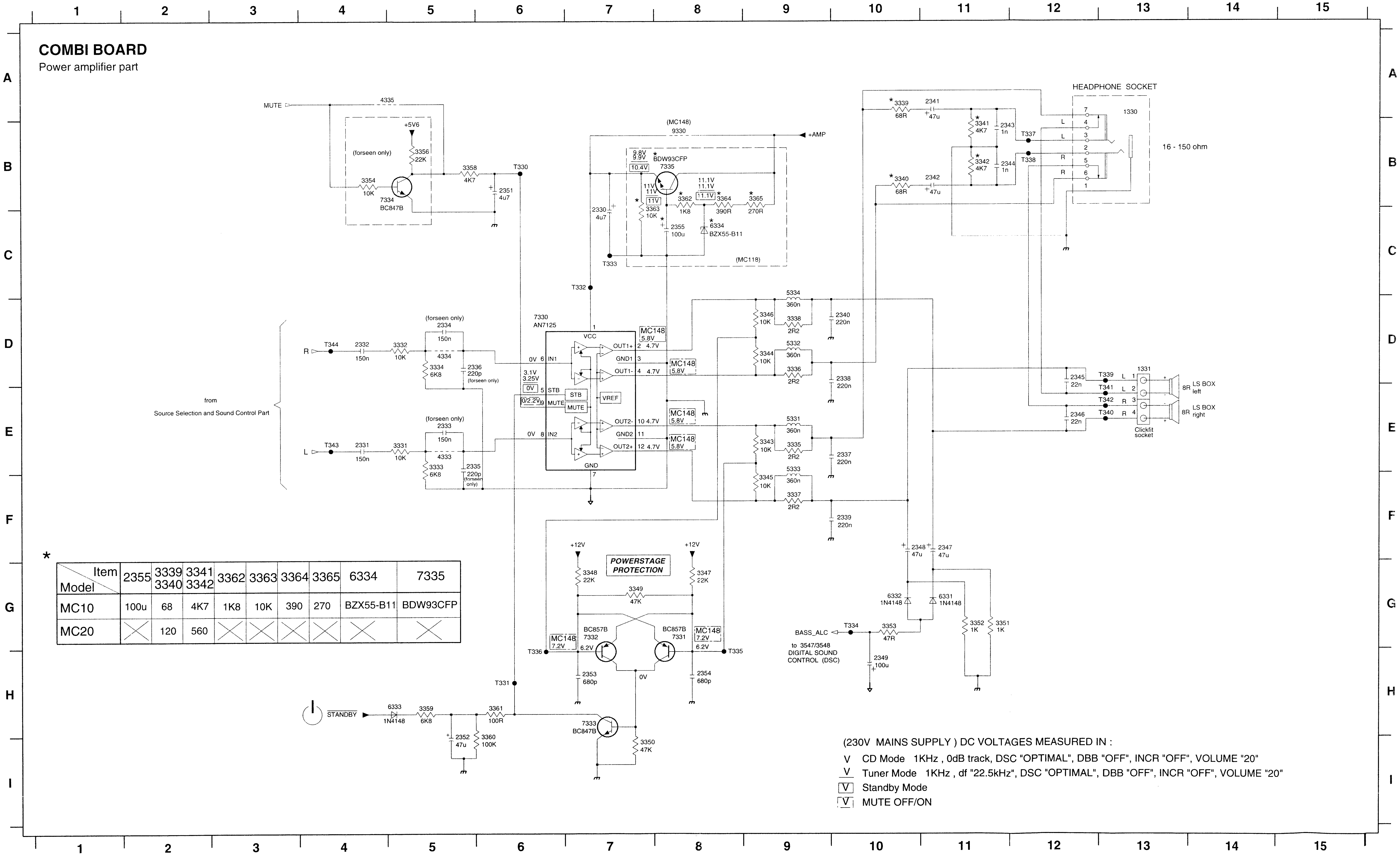
Model \ Item	3541 3542	3551 3552	3553 3554	3555 3556	3557 3558	3559 3560	3561 3562	5552	9551	9552	9553
MC10	220K	39K	6K8	22K	33K	3K3	15K	2.2uH	☒	✓	☒
MC20	150K	33K	8K2	6K8	18K	2K7	10K	☒	✓	☒	✓

(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

V	CD Mode 1KHz , 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
$\underline{V}$	Tuner Mode 1KHz , df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
$\boxed{V}$	Standby Mode
[V]	DSC OFF/ON at CD Mode 1KHz , 0dB track, VOLUME"20"

COMBI BOARD (Part 2) - CIRCUIT DIAGRAM

1330	A13
1331	D13
2330	C7
2331	E4
2332	D4
2333	E5
2334	D5
2335	E5
2336	D5
2337	E9
2338	D9
2339	F9
2340	D9
2341	A11
2342	B11
2343	B11
2344	B11
2345	D12
2346	E12
2347	F11
2348	F10
2349	H10
2351	B6
2352	I5
2353	H7
2354	H8
2355	C8
3331	E5
3332	D5
3333	E5
3334	D5
3335	E9
3336	D9
3337	F9
3338	D9
3339	A10
3340	B10
3341	B11
3342	B11
3343	E9
3344	D9
3345	F9
3346	D9
3347	G8
3348	G7
3349	G7
3350	I7
3351	G11
3352	G11
3353	G10
3354	B4
3356	B5
3358	B5
3359	H5
3360	I5
3361	H6
3362	B8
3363	C7
3364	B8
3365	B9
4333	E5
4334	D5
4335	A5
5331	E9
5332	D9
5333	E9
5334	C9
6331	G11
6332	G10
6333	H5
6334	C8
7330	D6
7331	G8
7332	G7
7333	H7
7334	B4
7335	B8
9330	B8
T330	B6
T331	H6
T332	C7
T333	C7
T334	G10
T335	H8
T336	H6
T337	B12
T338	B12
T339	D13
T340	E13
T341	E13
T342	E13
T343	E4
T344	D4



1
2
3
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7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
COMBI BOARD
Power amplifier part
MUTE
4335
+5V6
(forseen only)
3356 22K
3354 10K
7334 BC847B
3358 4K7
T330
2351 4u7
(MC148)
9330
+AMP
9.8V
9.9V
10.4V
BDW93CFP
7335
11V
11V
11V
11.1V
11.1V
11.1V
3362 1K8
3364 390R
3365 270R
3363 10K
2355 100u
6334 BZX55-B11
2330 4u7
T333
(MC118)
T332
7330 AN7125
VCC
OUT1+
GND1
OUT1-
IN1
STB
MUTE
VREF
IN2
OUT2-
GND2
OUT2+
GND
MC148 5.8V
4.7V
0V
3.1V
3.25V
0V
0/2.2V
T344
R
2332 150n
3332 10K
2334 150n
4334
3334 6K8
2336 220p
(forseen only)
from
Source Selection and Sound Control Part
T343
L
2331 150n
3331 10K
2333 150n
4333
3333 6K8
2335 220p
5334 360n
3346 10K
3338 2R2
2340 220n
5332 360n
3344 10K
3336 2R2
2338 220n
5331 360n
3343 10K
3335 2R2
2337 220n
5333 360n
3345 10K
3337 2R2
2339 220n
3339 68R
2341 47u
3340 68R
2342 47u
3341 4K7
2343 1n
3342 4K7
2344 1n
T337
T338
HEADPHONE SOCKET
1330
16 - 150 ohm
2345 22n
2346 22n
T339
T341
T342
T340
1331
LS BOX left
LS BOX right
8R
Clickfit socket
2348 47u
2347 47u
6332 1N4148
6331 1N4148
3352 1K
3351 1K
BASS_ALC
T334
3353 47R
2349 100u
to 3547/3548 DIGITAL SOUND CONTROL (DSC)
+12V
3348 22K
3347 22K
POWERSTAGE PROTECTION
3349 47K
BC857B 7332
BC857B 7331
MC148 7.2V
6.2V
T336
T335
2353 680p
2354 680p
0V
T331
STANDBY
6333 1N4148
3359 6K8
3361 100R
2352 47u
3360 100K
7333 BC847B
3350 47K

*

Item / Model	2355	3339 3340	3341 3342	3362	3363	3364	3365	6334	7335
MC10	100u	68	4K7	1K8	10K	390	270	BZX55-B11	BDW93CFP
MC20	X	120	560	X	X	X	X	X	X

(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

V CD Mode 1KHz , 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"

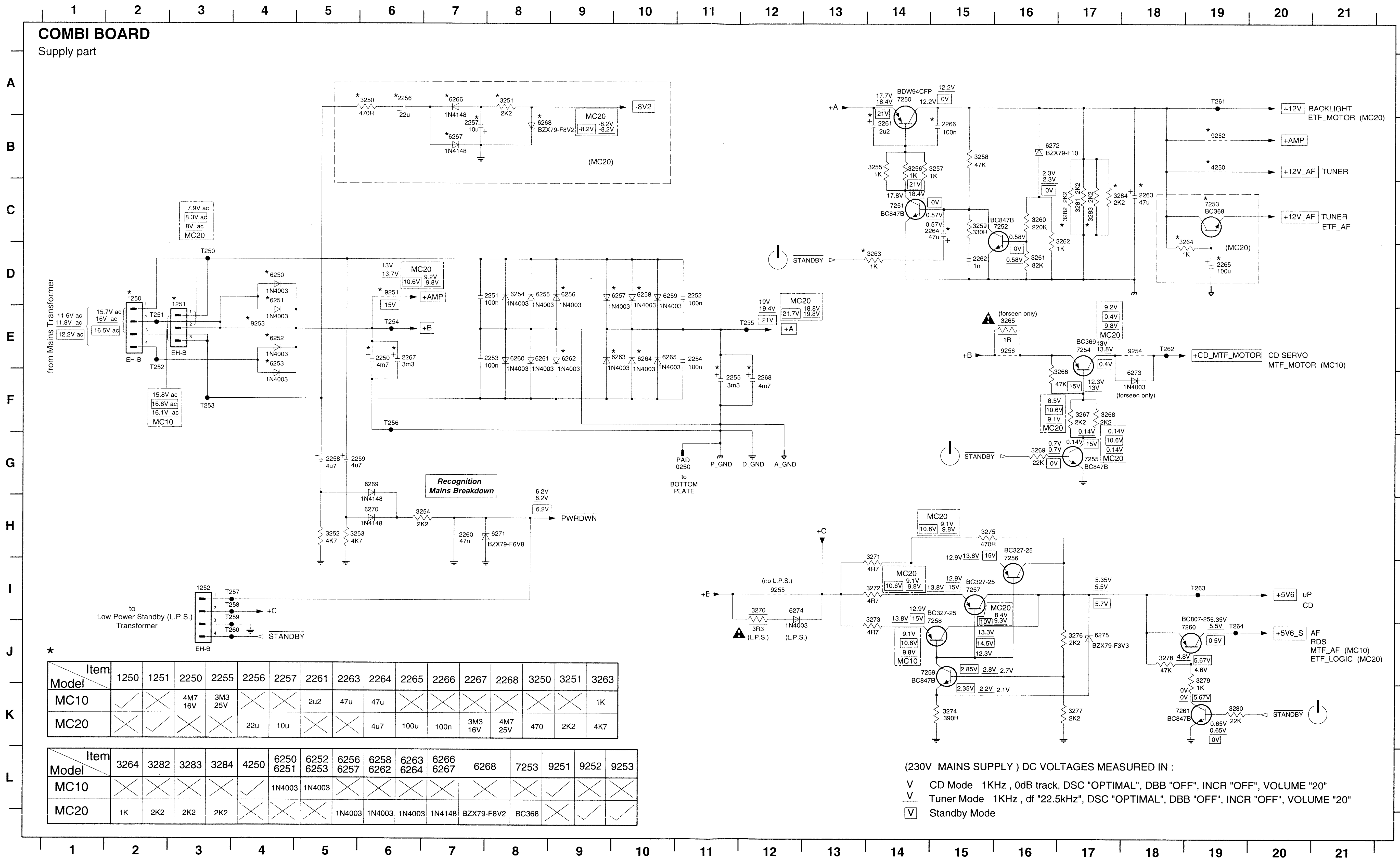
$\underline{V}$ Tuner Mode 1KHz , df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"

$\boxed{V}$ Standby Mode

[V] MUTE OFF/ON

COMBI BOARD (Part 3) - CIRCUIT DIAGRAM

0250	G11
1250	D2
1251	E3
1252	I3
2250	E6
2251	D8
2252	D11
2253	E8
2254	E11
2255	F11
2256	A6
2257	B7
2258	G5
2259	G5
2260	H7
2261	B14
2262	D15
2263	C18
2264	C15
2265	D19
2266	B15
2267	E6
2268	F12
3250	A6
3251	A8
3252	H5
3253	H5
3254	H7
3255	B14
3256	B14
3257	B15
3258	B15
3259	C15
3260	C16
3261	D16
3262	C17
3263	D14
3264	C19
3265	E16
3266	F17
3267	F17
3268	F17
3269	G16
3270	I12
3271	H14
3272	I14
3273	I14
3274	K15
3275	H15
3276	J17
3277	K17
3278	J18
3279	J19
3280	K19
3281	C17
3282	C17
3283	C17
3284	C17
4250	B19
6250	D4
6251	D4
6252	E4
6253	E4
6254	D8
6255	D8
6256	D9
6257	D10
6258	D10
6259	D10
6260	E8
6261	E8
6262	E9
6263	E10
6264	E10
6265	E10
6266	A7
6267	B7
6268	B8
6269	G6
6270	H6
6271	H8
6272	B16
6273	E18
6274	I12
6275	J17
7250	A14
7251	C14
7252	C16
7253	C19
7254	E17
7255	G17
7256	H16
7257	I15
7258	I14
7259	J15
7260	J18
7261	K19
9251	D6
9252	B19
9253	E4
9254	E18
9255	I12
9256	E16
T250	D3
T251	E2
T252	F2
T253	F3
T254	E6
T255	E12
T256	F6
T257	I4
T258	I4
T259	I4
T260	J4
T261	A19
T262	E18
T263	I19
T264	J19


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
A B C D E F G H I J K L
COMBI BOARD
Supply part
from Mains Transformer
11.6V ac
11.8V ac
12.2V ac
15.7V ac
16V ac
16.5V ac
*1250
*1251
EH-B
T250
T251
T252
T253
7.9V ac
8.3V ac
8V ac
MC20
15.8V ac
16.6V ac
16.1V ac
MC10
*6250 1N4003
*6251 1N4003
*6252 1N4003
*6253 1N4003
*9253
*3250 470R
*2256 22u
*6266 1N4148
*2257 10u
*6267 1N4148
*3251 2K2
*6268 BZX79-F8V2
-8.2V
-8.2V
-8.2V
-8V2
(MC20)
13V
13.7V
10.6V
9.2V
9.8V
*9251
15V
+AMP
T254
+B
*2250 4m7
*2267 3m3
2251 100n
6254 1N4003
6255 1N4003
*6256 1N4003
*6257 1N4003
*6258 1N4003
6259 1N4003
2252 100n
2253 100n
6260 1N4003
6261 1N4003
*6262 1N4003
*6263 1N4003
*6264 1N4003
6265 1N4003
2254 100n
19V
19.4V
21V
21.7V
18.8V
19.8V
T255
+A
*2255 3m3
*2268 4m7
T256
PAD 0250 to BOTTOM PLATE
P_GND
D_GND
A_GND
2258 4u7
2259 4u7
6269 1N4148
6270 1N4148
Recognition Mains Breakdown
3254 2K2
2260 47n
6271 BZX79-F6V8
3252 4K7
3253 4K7
6.2V
6.2V
6.2V
PWRDWN
1252
T257
T258
T259
T260
+C
STANDBY
to Low Power Standby (L.P.S.) Transformer
+A
BDW94CFP 7250
17.7V
18.4V
21V
12.2V
12.2V
0V
*2261 2u2
*2266 100n
3255 1K
3256 1K
3257 1K
21V
18.4V
17.8V
7251 BC847B
0V
0.57V
0.57V
*2264 47u
STANDBY
*3263 1K
3258 47K
3259 330R
2262 1n
BC847B 7252
0.58V
0V
0.58V
6272 BZX79-F10
2.3V
2.3V
0V
3260 220K
3261 82K
3262 1K
*3282 2K2
3281 2K2
*3283 2K2
*3284 2K2
*2263 47u
T261
+12V BACKLIGHT ETF_MOTOR (MC20)
*9252
+AMP
*4250
+12V_AF TUNER
*7253 BC368
+12V_AF TUNER ETF_AF
*3264 1K
*2265 100u
(MC20)
(forseen only)
3265 1R
+B
9256
9.2V
0.4V
9.8V
MC20
BC369 7254
13V
13.8V
0.4V
9254
T262
+CD_MTF_MOTOR CD SERVO MTF_MOTOR (MC10)
6273 1N4003 (forseen only)
3266 47K
15V
12.3V
13V
8.5V
10.6V
9.1V
MC20
3267 2K2
3268 2K2
0.14V
0.14V
0.14V
10.6V
0.14V
MC20
15V
0.7V
0.7V
3269 22K
0V
7255 BC847B
STANDBY
+E
(no L.P.S.)
9255
3270 3R3 (L.P.S.)
6274 1N4003 (L.P.S.)
MC20
10.6V
9.1V
9.8V
3275 470R
3271 4R7
3272 4R7
3273 4R7
12.9V
13.8V
15V
BC327-25 7256
BC327-25 7257
BC327-25 7258
8.4V
10V
9.3V
13.3V
14.5V
12.3V
9.1V
10.6V
9.8V
MC10
7259 BC847B
2.85V
2.8V
2.7V
2.35V
2.2V
2.1V
3274 390R
5.35V
5.5V
5.7V
3276 2K2
6275 BZX79-F3V3
3277 2K2
T263
+5V6 uP CD
BC807-25 7260
5.35V
5.5V
0.5V
T264
+5V6_S AF RDS MTF_AF (MC10) ETF_LOGIC (MC20)
3278 47K
4.8V
5.67V
4.6V
3279 1K
0V
0V
5.67V
7261 BC847B
0.65V
0.65V
0V
3280 22K
STANDBY

*

Model \ Item	1250	1251	2250	2255	2256	2257	2261	2263	2264	2265	2266	2267	2268	3250	3251	3263
MC10	✓	☒	4M7 16V	3M3 25V	☒	☒	2u2	47u	47u	☒	☒	☒	☒	☒	☒	1K
MC20	☒	✓	☒	☒	22u	10u	☒	☒	4u7	100u	100n	3M3 16V	4M7 25V	470	2K2	4K7

Model \ Item	3264	3282	3283	3284	4250	6250 6251	6252 6253	6256 6257	6258 6262	6263 6264	6266 6267	6268	7253	9251	9252	9253
MC10	☒	☒	☒	☒	✓	1N4003	1N4003	☒	☒	☒	☒	☒	☒	✓	☒	☒
MC20	1K	2K2	2K2	2K2	☒	☒	☒	1N4003	1N4003	1N4003	1N4148	BZX79-F8V2	BC368	☒	✓	✓

(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

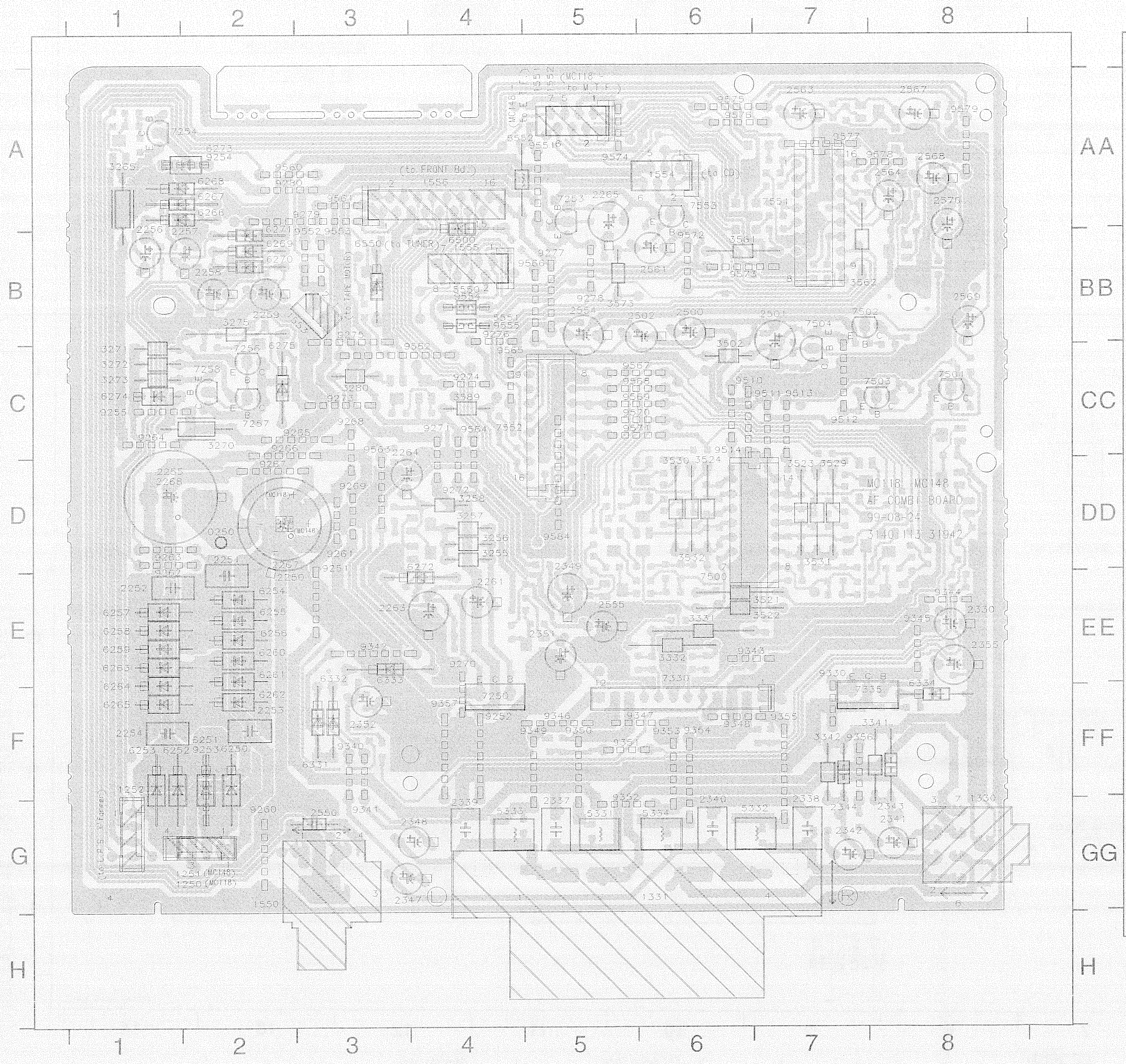
V CD Mode 1KHz , 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"

$\underline{V}$ Tuner Mode 1KHz , df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"

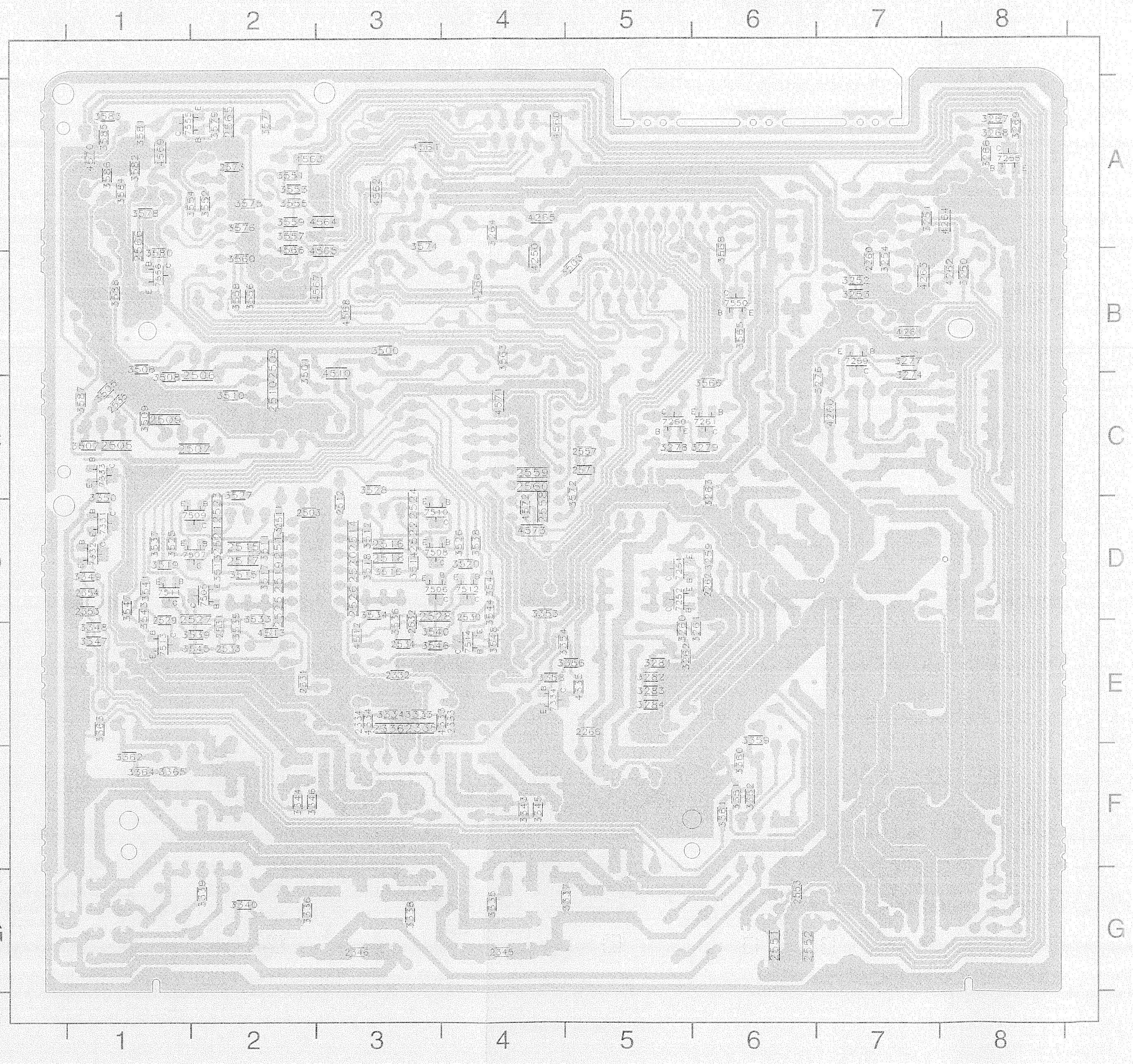
$\boxed{V}$ Standby Mode

COMBI BOARD - LAYOUT DIAGRAM

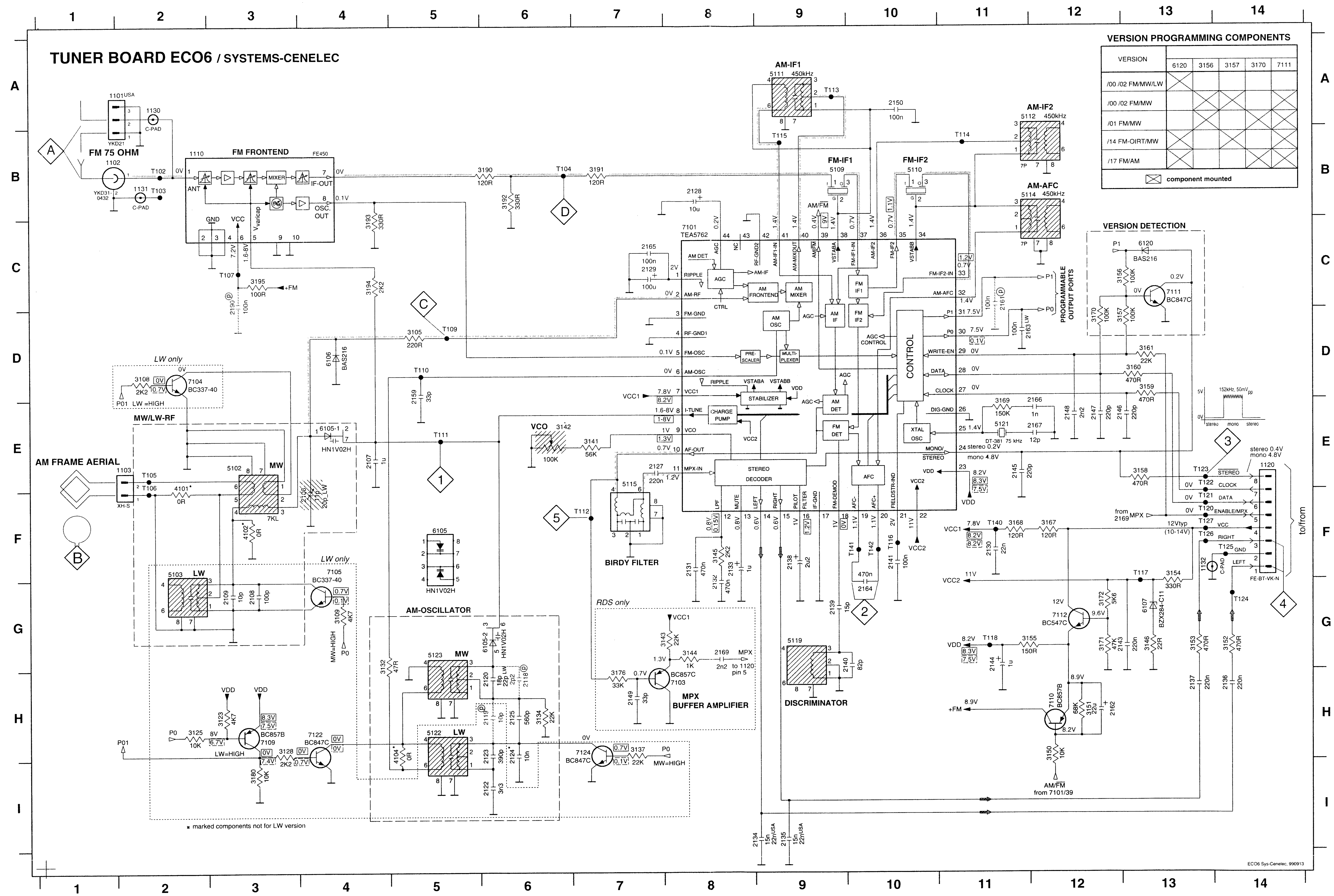
0250 D2	2254 F1	2341 G8	2563 A7	3331 E6	5331 G5	6260 E2	6332 E3	7504 B7	9268 C3	9343 E6	9512 C7	9569 C5
1250 G2	2255 D1	2342 G7	2564 A8	3332 E6	5332 G7	6261 E2	6333 E3	7551 A7	9269 D3	9344 E8	9513 C7	9570 C5
1251 G2	2256 A1	2343 G8	2567 A8	3341 F8	5333 G4	6262 F2	6334 E8	7552 C4	9270 E4	9345 E8	9514 C6	9571 C5
1252 F1	2257 A2	2344 G7	2568 A8	3342 F7	5334 G6	6263 E1	6500 B4	7553 A6	9271 C4	9346 F5	9551 A5	9572 B6
1330 G8	2258 B2	2347 G3	2569 B8	3502 C6	5550 B4	6264 E1	6550 B3	9251 D3	9272 D4	9347 F6	9552 B3	9573 B6
1331 G6	2259 B2	2348 G4	2570 A8	3521 E7	5551 B4	6265 F1	7250 F4	9252 F4	9273 C3	9348 F6	9553 B3	9574 A5
1550 G2	2261 E4	2349 D5	3255 D4	3522 E7	5552 A4	6266 A2	7253 A5	9253 F2	9274 C4	9349 F5	9554 B4	9575 A6
1551 A5	2263 E3	2351 E5	3256 D4	3523 D7	6250 F2	6267 A2	7254 A2	9254 A2	9275 B3	9350 F5	9555 B4	9576 A6
1552 A5	2264 C3	2352 F3	3257 D4	3524 D6	6251 F2	6268 A2	7256 C2	9255 C1	9276 B4	9351 F5	9560 A2	9577 A7
1553 B3	2265 A5	2355 E8	3258 D4	3529 D7	6252 F1	6269 B2	7257 C2	9260 G2	9277 B5	9352 F5	9561 A3	9578 A8
1554 A6	2267 D2	2500 B6	3265 A1	3530 D6	6253 F1	6270 B2	7258 C2	9261 D3	9278 B5	9353 F6	9562 C4	9579 A8
1555 B4	2268 D1	2501 B7	3270 C2	3531 D7	6254 E2	6271 A2	7330 E6	9262 D1	9279 A3	9354 F6	9563 C3	9584 D5
1556 A4	2330 E8	2502 B6	3271 C1	3532 D6	6255 E2	6272 D4	7335 F7	9263 D1	9280 A2	9355 F7	9564 C4	
2250 E2	2337 G5	2550 G3	3272 C1	3561 B6	6256 E2	6273 A2	7500 E6	9264 C1	9330 E7	9356 F7	9565 C4	
2251 D2	2338 G7	2554 B5	3273 C1	3562 B7	6257 E1	6274 C1	7501 C8	9265 C3	9340 F3	9357 F4	9566 B5	
2252 E1	2339 G4	2555 E5	3275 B2	3573 B5	6258 E1	6275 C2	7502 B7	9266 C2	9341 G3	9510 C6	9567 C5	
2253 F2	2340 G6	2561 B6	3280 C3	3589 C4	6259 E1	6331 F3	7503 C8	9267 D2	9342 E3	9511 C7	9568 C5	



2260 B7	2509 C1	2527 D2	2571 C5	3276 C7	3345 F4	3365 F1	3519 D1	3545 E2	3572 C5	4261 B7	4566 A2	7505 D2
2262 D6	2510 C2	2528 D3	2573 A2	3277 B7	3346 F2	3500 B3	3520 D4	3546 E3	3574 A3	4262 B8	4567 B3	7506 D3
2266 E5	2511 D2	2529 D1	3250 B8	3278 C5	3347 E1	3501 B2	3525 D1	3547 D1	3575 A2	4263 B7	4568 B3	7507 D2
2331 E2	2512 D3	2530 D4	3251 A7	3279 C6	3348 E1	3503 B5	3526 D4	3548 E4	3576 A2	4264 A8	4569 A1	7508 D3
2332 E3	2513 D2	2531 E2	3252 B7	3281 E5	3349 D1	3505 C1	3527 C2	3551 A2	3577 A2	4265 A4	4570 A1	7509 D2
2333 E4	2514 D3	2532 E3	3253 B7	3282 E5	3350 C1	3506 B1	3528 C3	3552 A2	3578 A1	4266 B4	4571 C4	7510 D3
2334 E3	2515 D2	2533 E2	3254 B7	3283 E5	3351 F6	3507 C1	3533 D2	3553 A2	3579 A2	4333 E4	4572 D4	7511 D1
2335 E3	2516 D3	2534 E3	3259 D6	3284 E5	3352 F6	3508 C1	3534 D3	3554 A2	3580 B1	4334 E3	4573 D4	7512 D4
2336 E3	2517 D2	2535 C1	3260 E5	3333 E3	3353 D4	3509 C1	3535 E2	3555 A2	3581 A1	4335 E5	7251 D5	7513 E1
2345 G4	2518 D3	2551 G6	3261 E6	3334 E3	3354 E4	3510 C2	3536 E3	3556 B2	3582 A1	4510 B3	7252 D5	7514 E4
2346 G3	2519 D2	2552 G6	3262 E5	3335 G4	3356 E5	3511 D2	3537 D1	3557 A2	3583 A1	4512 E3	7255 A8	7550 B6
2353 D1	2520 D3	2553 G6	3263 C6	3336 G2	3358 E4	3512 D3	3538 D4	3558 B2	3584 A1	4513 E2	7259 B7	7555 A1
2354 D1	2521 D2	2557 C5	3264 A4	3337 G5	3359 E6	3513 D2	3539 E2	3559 A2	3585 A1	4560 A4	7260 C5	7556 B1
2503 D2	2522 D3	2558 D4	3266 A8	3338 G3	3360 F6	3514 D3	3540 E3	3560 B2	3586 A1	4561 A3	7261 C6	
2505 C1	2523 D2	2559 C4	3267 A8	3339 G2	3361 F6	3515 D2	3541 D1	3563 B4	3587 C1	4562 A3	7331 D1	
2506 C2	2524 D3	2560 C4	3268 A8	3340 G2	3362 F1	3516 D3	3542 D4	3565 B6	3588 B1	4563 A2	7332 D1	
2507 C2	2525 D2	2565 A2	3269 A8	3343 F4	3363 E1	3517 D2	3543 D1	3566 C6	4250 B4	4564 A3	7333 C1	
2508 B2	2526 D3	2566 A1	3274 C7	3344 F2	3364 F1	3518 D3	3544 D4	3568 B6	4260 C7	4565 B3	7334 E4	



TUNER BOARD ECO6 - CIRCUIT DIAGRAM


TUNER BOARD ECO6 / SYSTEMS-CENELEC
VERSION PROGRAMMING COMPONENTS
VERSION
6120
3156
3157
3170
7111
/00 /02 FM/MW/LW
/00 /02 FM/MW
/01 FM/MW
/14 FM-OIRT/MW
/17 FM/AM
component mounted
VERSION DETECTION
FM 75 OHM
FM FRONTEND
AM-IF1
AM-IF2
AM-AFC
FM-IF1
FM-IF2
7101 TEA5762
CONTROL
STEREO DECODER
STABILIZER
CHARGE PUMP
XTAL OSC
AFC
PROGRAMMABLE OUTPUT PORTS
AM FRAME AERIAL
LW only
MW/LW-RF
AM-OSCILLATOR
VCO
BIRDY FILTER
RDS only
MPX BUFFER AMPLIFIER
DISCRIMINATOR
to/from
FE-BT-VK-N
* marked components not for LW version
ECO6 Sys-Cenelec, 990913

LEGEND

* ... only assembled in FM/AM-version
Ⓟ...for provision only
USA ... for USA version only
LW ... for LW version only

SMD jumper
41xx
0R

EVM

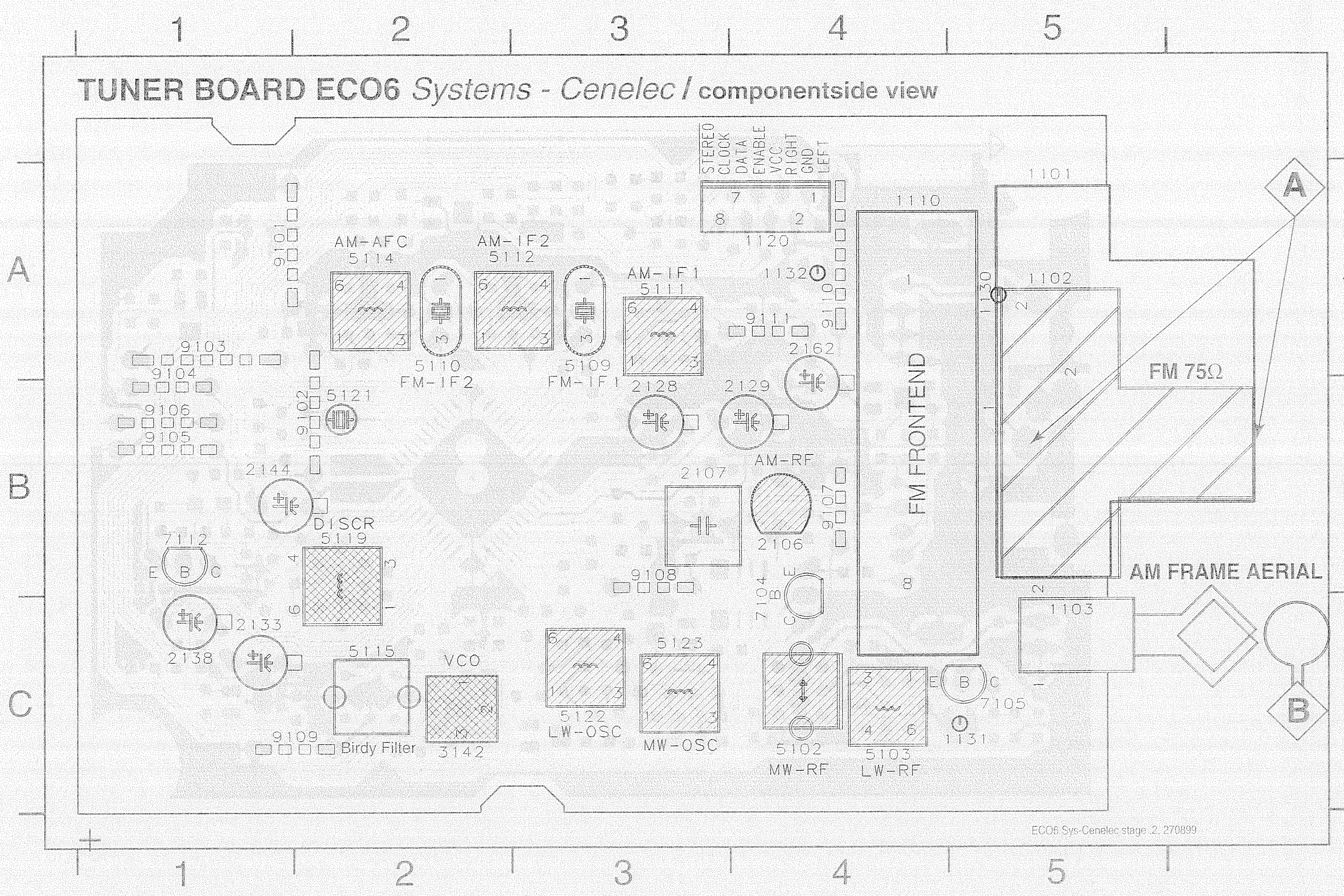
...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while
set is tuned to a strong transmitter

Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right

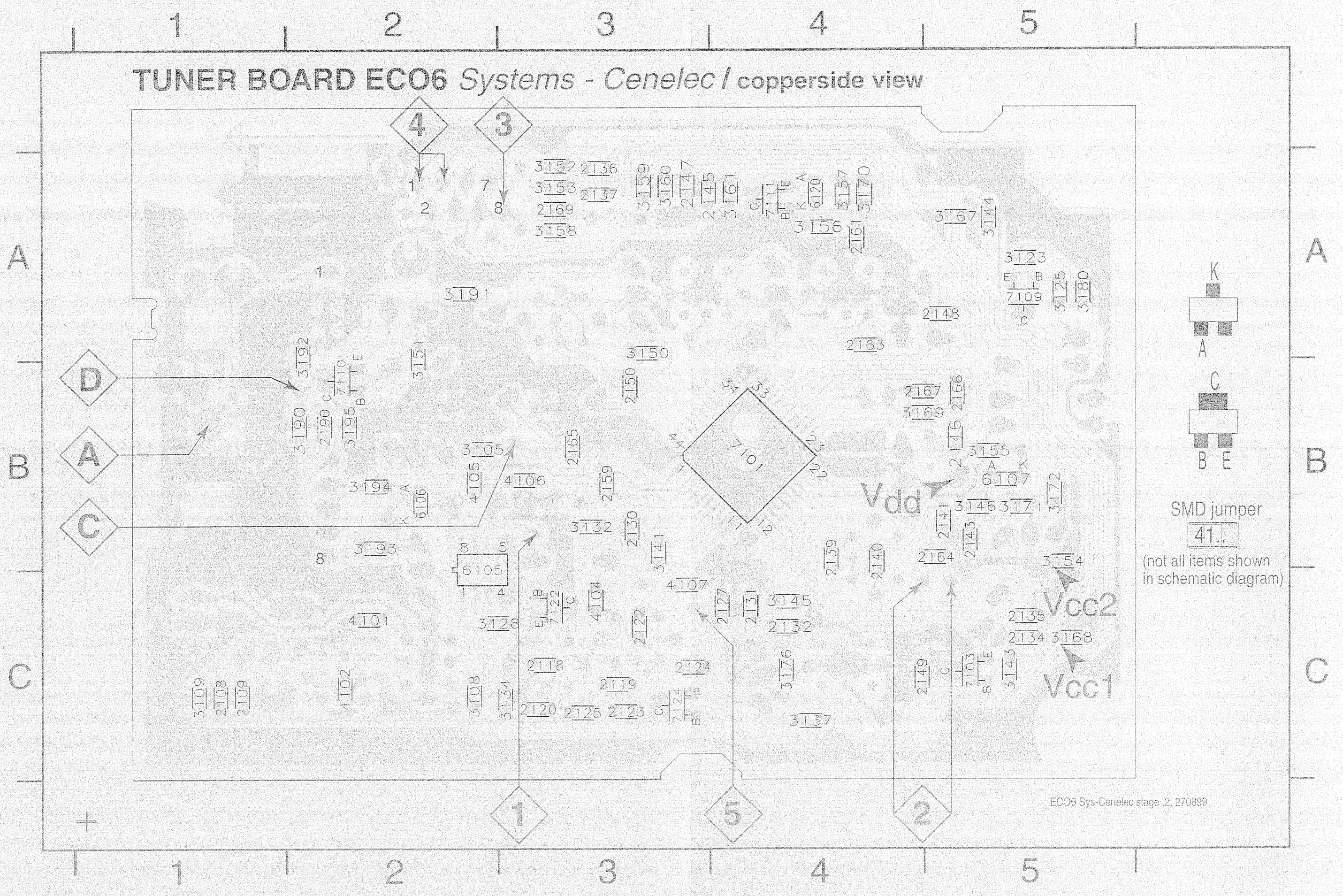
1101	A2
1102	B1
1103	E2
1110	B2
1120	E14
1130	A2
1131	B2
1132	F13
2106	E3
2107	E4
2108	G3
2109	G3
2118	H6
2119	H6
2120	H6
2122	I6
2123	H6
2124	H6
2125	H6
2127	E7
2128	B8
2129	C7
2130	F11
2131	F8
2132	F8
2133	F8
2134	I8
2135	I9
2136	H14
2137	H13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	E11
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2159	D5
2161	C11
2162	H12
2163	D11
2164	G10
2165	C7
2166	E11
2167	E11
2169	G8
2190	C3
3105	D5
3108	D2
3109	G4
3123	H3
3125	H2
3128	H3
3132	G4
3134	H6
3137	H7
3141	E7
3142	E6
3143	G7
3144	G8
3145	F8
3146	G13
3150	H12
3151	H12
3152	G14
3153	G13
3154	F13
3155	G12
3156	C12
3157	D12
3158	E13
3159	D13
3160	D13
3161	D13
3167	F12
3168	F11
3169	E11
3170	D12
3171	G12
3172	G12
3176	H7
3180	I3
3190	B6
3191	B7
3192	B6
3193	B4
3194	C4
3195	C3
4101	E2
4102	F3
4104	H5
5102	E3
5103	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5115	E7
5119	G9
5121	E11
5122	H5
5123	G5
6105-1	E4
6105-2	G6
6106	D4
6107	G13
6120	C13
7101	C8
7103	H8
7104	D2
7105	F4
7109	H3
7110	H12
7111	C13
7112	G12
7122	H4
7124	H7
T102	B2
T103	B2
T104	B6
T105	E2
T106	E2
T107	C3
T109	D5
T110	D5
T111	E5
T112	F7
T113	A9
T114	B11
T116	F10
T117	F13
T118	G11
T120	F13
T121	F13
T122	E13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T140	F11
T141	F10
T142	F10

TUNER BOARD ECO6 - LAYOUT DIAGRAM

1101	B5
1102	B5
1103	C5
1110	B4
1120	A4
1130	A5
1131	C5
1132	A4
2106	B4
2107	B3
2128	B3
2129	B4
2133	C1
2138	B1
2144	B1
2162	A4
3142	C2
5102	C4
5103	C4
5109	A3
5110	A2
5111	A3
5112	A3
5114	A2
5115	C2
5119	B2
5121	B2
5122	C3
5123	C3
7104	C4
7105	C5
7112	B1
9101	A2
9102	B2
9103	A1
9104	B1
9105	B1
9106	B1
9107	B4
9108	B3
9109	C2
9110	A4
9111	A4

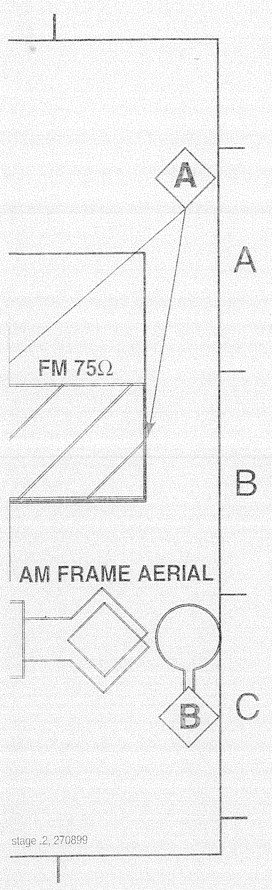

TUNER BOARD ECO6 Systems - Cenelec / componentside view
1
2
3
4
5
A
B
C
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
AM-AFC
5114
AM-IF2
5112
AM-IF1
5111
5110
FM-IF2
5109
FM-IF1
9101
9102
9103
9104
9105
9106
9107
9108
9109
9110
9111
1101
1102
1103
1110
1120
1130
1131
1132
2106
2107
2128
2129
2133
2138
2144
2162
5121
7112
DISCR
5119
5115
VCO
3142
Birdy Filter
5122
LW-OSC
5123
MW-OSC
5102
MW-RF
5103
LW-RF
7104
7105
AM-RF
FM FRONTEND
FM 75Ω
AM FRAME AERIAL
A
B
ECO6 Sys-Cenelec stage. 2, 270899

2108	C1
2109	C1
2118	C3
2119	C3
2120	C3
2122	C3
2123	C3
2124	C3
2125	C3
2127	C4
2130	B3
2131	C4
2132	C4
2134	C5
2135	C5
2136	A3
2137	A3
2139	B4
2140	B4
2141	B5
2143	B5
2145	A3
2146	B5
2147	A3
2148	A5
2149	C4
2150	B3
2159	B3
2161	A4
2163	A4
2164	B5
2165	B3
2166	B5
2167	B4
2169	A3
2190	B2
3105	B2
3108	C2
3109	C1
3123	A5
3125	A5
3128	C2
3132	B3
3134	C3
3137	C4
3141	B3
3143	C5
3144	A5
3145	C4
3146	B5
3150	A3
3151	A2
3152	A3
3153	A3
3154	B5
3155	B5
3156	A4
3157	A4
3158	A3
3159	A3
3160	A3
3161	A4
3167	A5
3168	C5
3169	B4
3170	A4
3171	B5
3172	B5
3176	C4
3180	A5
3190	B2
3191	A2
3192	A2
3193	B2
3194	B2
3195	B2
4101	C2
4102	C2
4104	C3
4105	B2
4106	B3
4107	C3
6105	B2
6106	B2
6107	B5
6120	A4
7101	B4
7103	C5
7109	A5
7110	B2
7111	A4
7122	C3
7124	C3

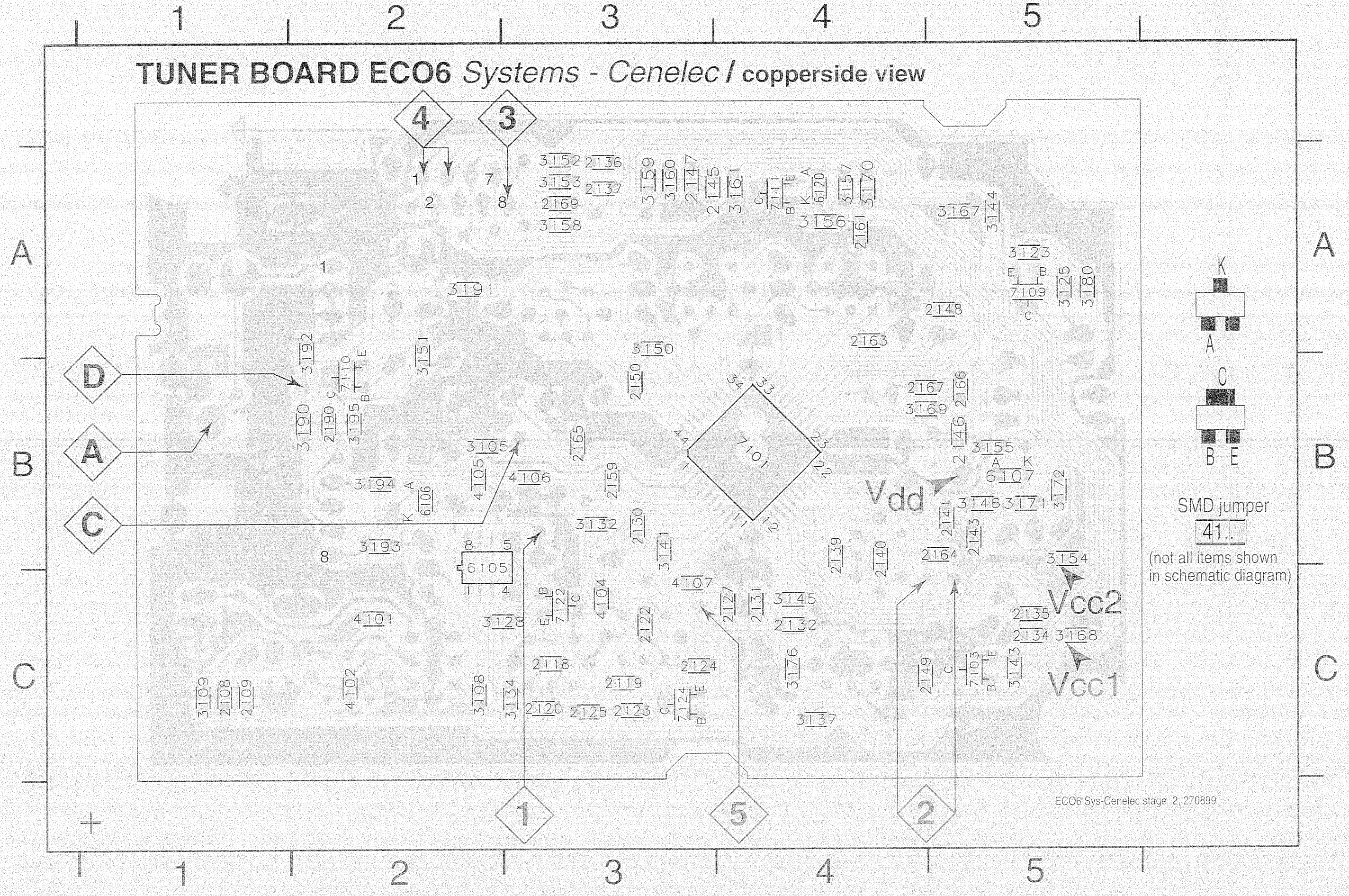

TUNER BOARD ECO6 Systems - Cenelec / copperside view
1
2
3
4
5
A
B
C
4
3
D
A
C
1
5
2
7101
Vdd
Vcc2
Vcc1
K
A
C
B E
SMD jumper
41..
(not all items shown in schematic diagram)
ECO6 Sys-Cenelec stage. 2, 270899

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

9108 B3	9111 A4
9109 C2	
9110 A4	



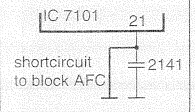
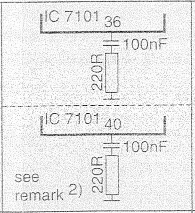
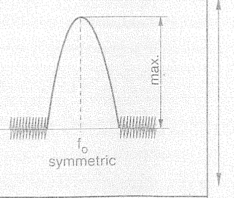
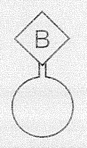
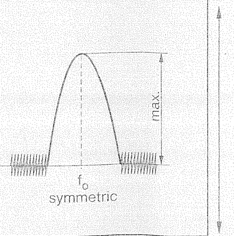
2108 C1	2123 C3	2132 C4	2140 B4	2148 A5	2164 B5	3105 B2	3132 B3	3145 C4	3154 B5	3160 A3	3171 B5	3192 A2	4104 C3	6107 B5	7111 A4
2109 C1	2124 C3	2134 C5	2141 B5	2149 C4	2165 B3	3108 C2	3134 C3	3146 B5	3155 B5	3161 A4	3172 B5	3193 B2	4105 B2	6120 A4	7122 C3
2118 C3	2125 C3	2135 C5	2143 B5	2150 B3	2166 B5	3109 C1	3137 C4	3150 A3	3156 A4	3167 A5	3176 C4	3194 B2	4106 B3	7101 B4	7124 C3
2119 C3	2127 C4	2136 A3	2145 A3	2159 B3	2167 B4	3123 A5	3141 B3	3151 A2	3157 A4	3168 C5	3180 A5	3195 B2	4107 C3	7103 C5	
2120 C3	2130 B3	2137 A3	2146 B5	2161 A4	2169 A3	3125 A5	3143 C5	3152 A3	3158 A3	3169 B4	3190 B2	4101 C2	6105 B2	7109 A5	
2122 C3	2131 C4	2139 B4	2147 A3	2163 A4	2190 B2	3128 C2	3144 A5	3153 A3	3159 A3	3170 A4	3191 A2	4102 C2	6106 B2	7110 B2	


TUNER BOARD ECO6 *Systems - Cenelec* / **copperside view**

1
2
3
4
5
A
B
C
4
3
D
A
C
1
5
2
Vdd
Vcc2
Vcc1
7101
6105
K
A
C
B E
SMD jumper
41..
(not all items shown in schematic diagram)
ECO6 Sys-Cenelec stage 2, 270899

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 Cenelec FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	D	 IC 7101 21 shortcircuit to block AFC 2141	5119	2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R IC 7101 40 100nF 220R see remark 2)	5111	5	 max. f_o symmetric
				5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0mV ±2mV
AM RF 3)						
MW	1494kHz	B  Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

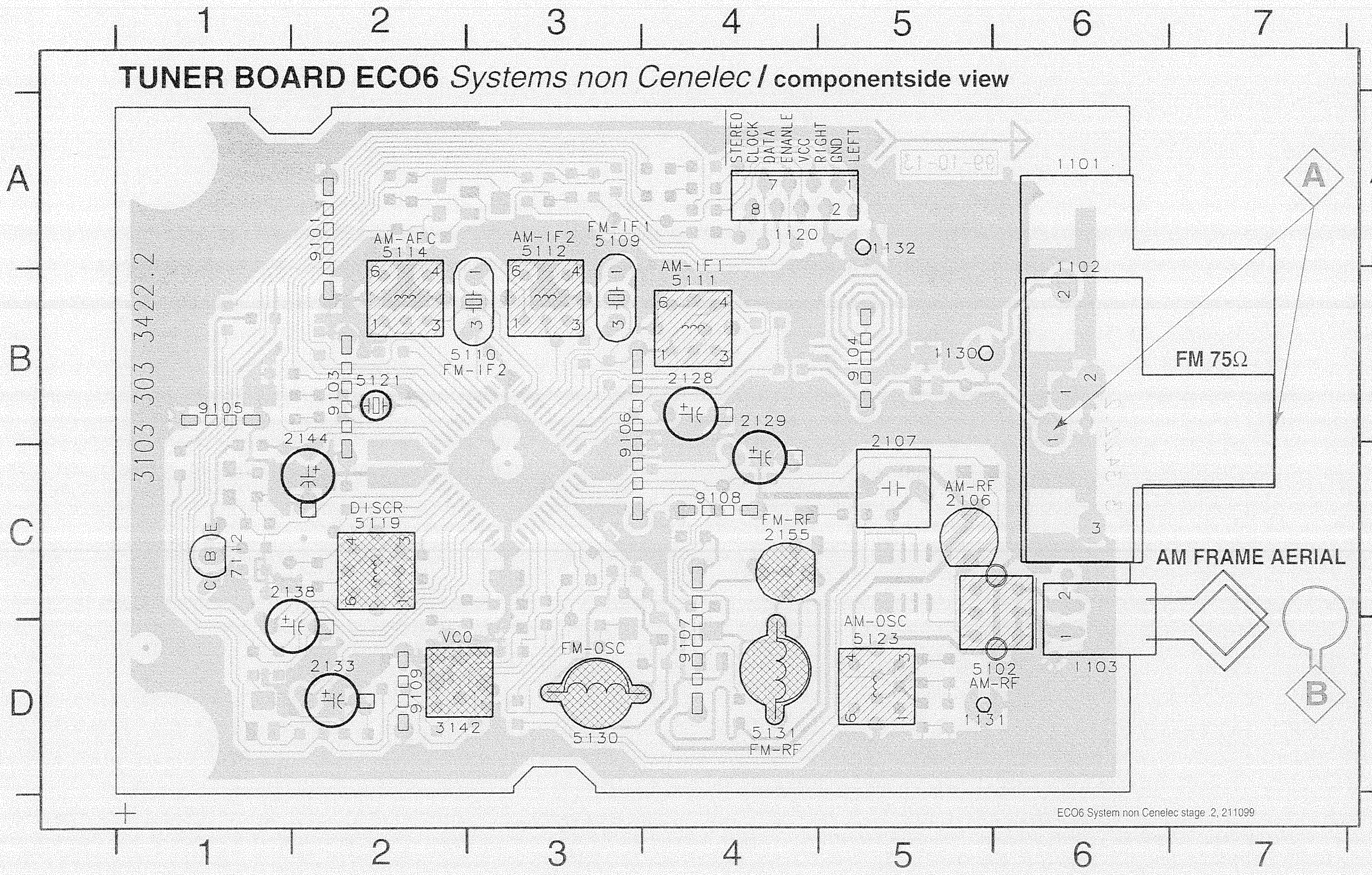
2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

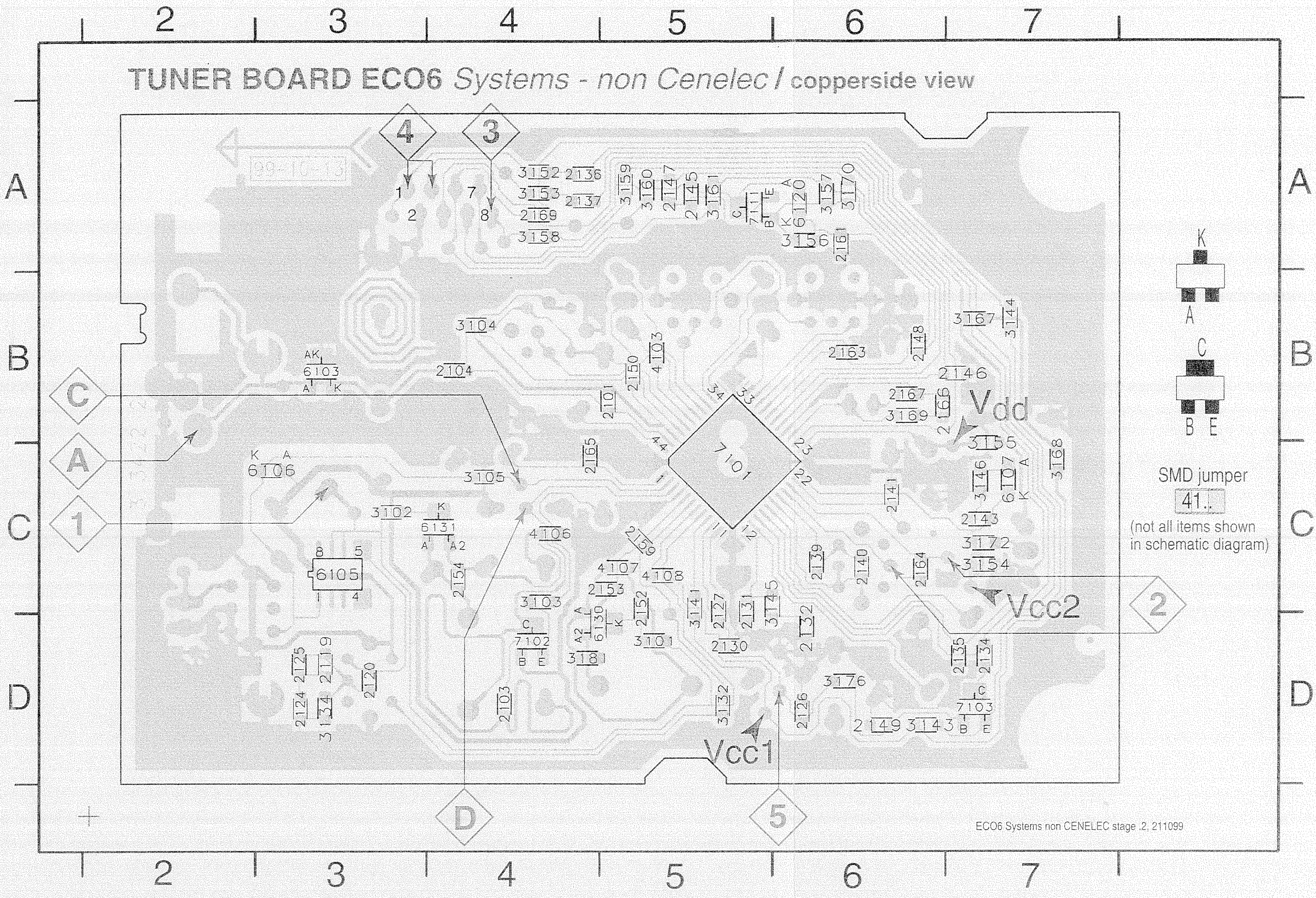
↕ Repeat

TUNER BOARD ECO6 (Non Cenelec) - LAYOUT DIAGRAM

1101	A6	1120	A4	1132	A5	2128	C4	2138	C2	3142	D2	5110	B3	5114	A2	5123	D5	7112	C1	9104	B5	9107	D4		
1102	B6	1130	B5	2106	C5	2129	B4	2144	B2	5102	D6	5111	B4	5119	C2	5130	D3	9101	A2	9105	B1	9108	C4		
1103	D6	1131	D5	2107	B5	2133	D2	2155	C4	5109	A3	5112	A3	5121	B2	5131	D4	9103	B2	9106	B3	9109	D2		


TUNER BOARD ECO6 Systems non Cenelec / componentside view
1
2
3
4
5
6
7
A
B
C
D
3103 303 3422.2
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
1101
1102
1120
1132
1130
AM-AFC
5114
AM-IF2
5112
FM-IF1
5109
AM-IF1
5111
5110
FM-IF2
5121
9101
9103
9105
9104
9106
2128
2129
2144
DISCR
5119
7112
2138
2133
VCO
9109
3142
FM-OSC
5130
9107
9108
FM-RF
2155
2107
AM-RF
2106
AM-OSC
5123
5102
AM-RF
1131
5131
FM-RF
FM 75Ω
AM FRAME AERIAL
1103
ECO6 System non Cenelec stage 2, 211099

2101	B5	2125	D3	2134	D7	2141	C6	2149	D6	2161	A6	2169	A4	3132	D5	3146	C7	3157	A6	3168	C7	4103	B5	6106	C3	7102	D4								
2103	D4	2126	D6	2135	D7	2143	C7	2150	B5	2163	B6	3101	D5	3134	D3	3152	A4	3158	A4	3169	B6	4106	C4	6107	C7	7103	D7								
2104	B4	2127	C5	2136	A4	2145	A5	2152	C5	2164	C6	3102	C3	3141	C5	3153	A4	3159	A5	3170	A6	4107	C5	6120	A6	7111	A5								
2119	D3	2130	D5	2137	A4	2146	B7	2153	C5	2165	C4	3103	C4	3143	D6	3154	C7	3160	A5	3172	C7	4108	C5	6130	D4										
2120	D3	2131	C5	2139	C6	2147	A5	2154	C4	2166	B6	3104	B4	3144	B7	3155	C7	3161	A5	3176	D6	6103	B3	6131	C4										
2124	D3	2132	D6	2140	C6	2148	B6	2159	C5	2167	B6	3105	C4	3145	C5	3156	A6	3167	B7	3181	D4	6105	C3	7101	C5										


TUNER BOARD ECO6 Systems - non Cenelec / copperside view
2
3
4
5
6
7
A
B
C
D
4
3
C
A
1
2
D
5
Vdd
Vcc1
Vcc2
7101
6103
6106
6105
6131
7102
7103
K
A
C
B E
SMD jumper
41..
(not all items shown in schematic diagram)
ECO6 Systems non CENELEC stage 2, 211099

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJ

Waverang
VARICAP ALIC
FM 87.5 - 108MH (65.81 - 74, 87.5 - 108
MW FM/AM-version, 10kHz 530 - 1700kH
FM/MW-version, 9kHz g 531 - 1602kH
LW 153 - 279kHz
MW FM/MW/LW- version, 9 531 - 1602kHz
FM IF
FM
FM RF
FM 87.5 - 108MH (65.81 - 74, 87.5 - 108
VCO
FM
AM IF
MW
AM AFC **MW**
AM RF 3)
MW 4) FM/MW/LW- and FM/MW-v (9kHz grid) 531 - 1602kHz
LW
MW FM/AM-version, 10kHz 530 - 1700kHz

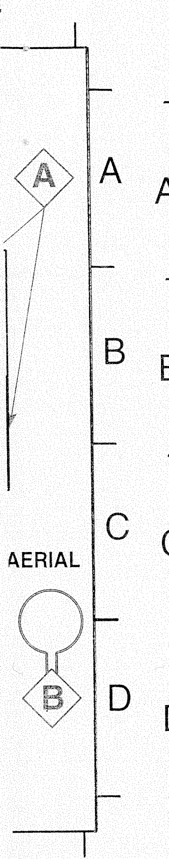
Use Service Testprog

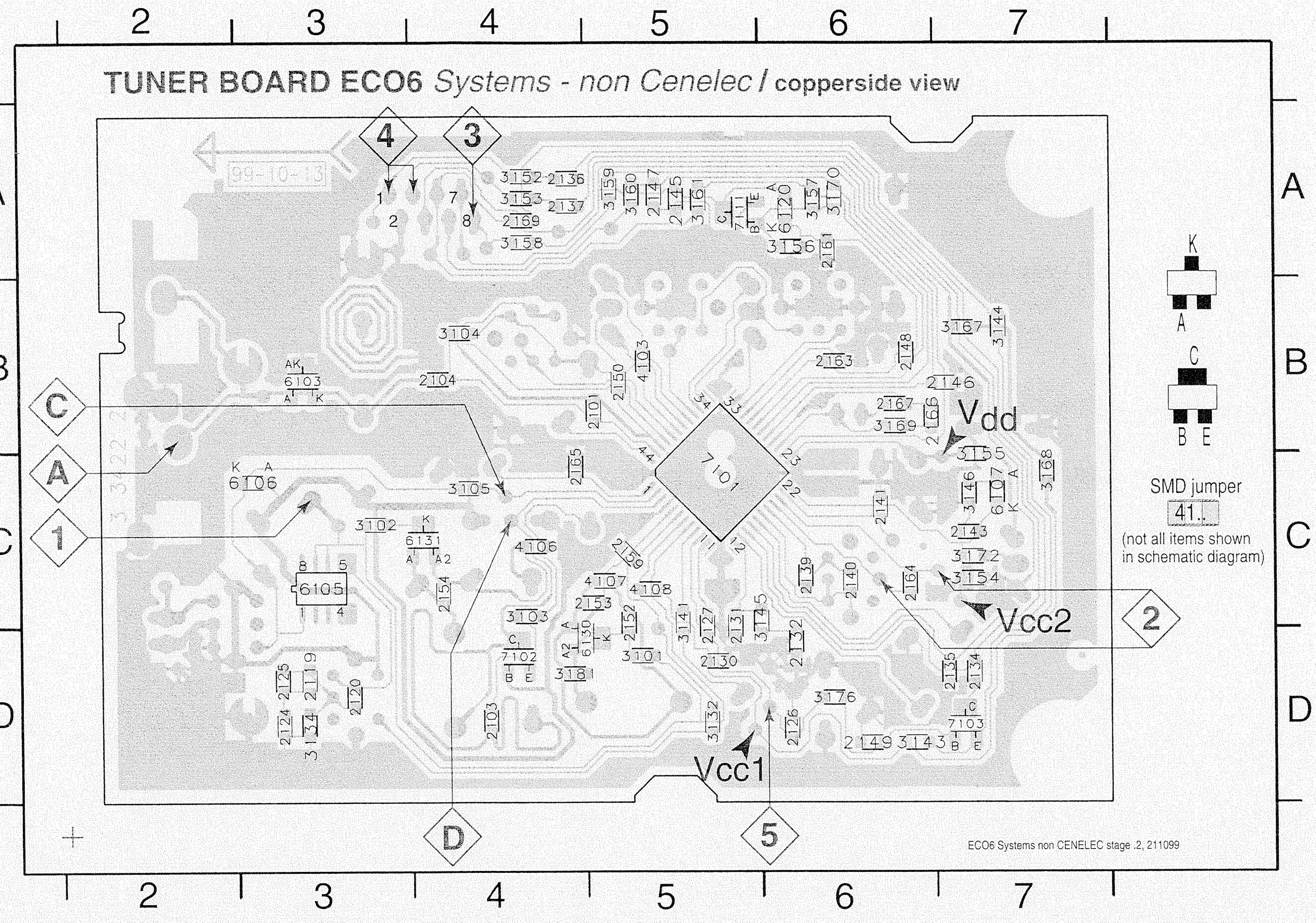
1) If sensitivity of frequ
(input signal: stereo

3) For AM RF adjustm

↑ Repeat

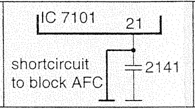
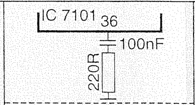
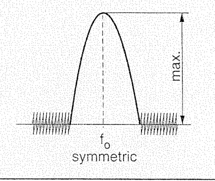
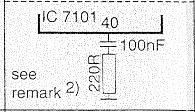
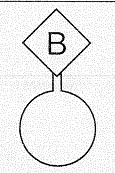
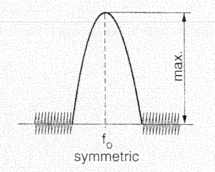
2101	B5	2125	D3	2134	D7	2141	C6	2149	D6	2161	A6	2169	A4	3132	D5	3146	C7	3157	A6	3168	C7	4103	B5	6106	C3	7102	D4				
2103	D4	2126	D6	2135	D7	2143	C7	2150	B5	2163	B6	3101	D5	3134	D3	3152	A4	3158	A4	3169	B6	4106	C4	6107	C7	7103	D7				
2104	B4	2127	C5	2136	A4	2145	A5	2152	C5	2164	C6	3102	C3	3141	C5	3153	A4	3159	A5	3170	A6	4107	C5	6120	A6	7111	A5				
2119	D3	2130	D5	2137	A4	2146	B7	2153	C5	2165	C4	3103	C4	3143	D6	3154	C7	3160	A5	3172	C7	4108	C5	6130	D4						
2120	D3	2131	C5	2139	C6	2147	A5	2154	C4	2166	B6	3104	B4	3144	B7	3155	C7	3161	A5	3176	D6	6103	B3	6131	C4						
2124	D3	2132	D6	2140	C6	2148	B6	2159	C5	2167	B6	3105	C4	3145	C5	3156	A6	3167	B7	3181	D4	6105	C3	7101	C5						


A
B
C
D
AERIAL
A
B


2
3
4
5
6
7
A
B
C
D
TUNER BOARD ECO6 Systems - non Cenelec / copperside view
99-10-13
4
3
C
A
1
D
5
2
Vdd
Vcc1
Vcc2
6103
6106
6105
6131
3102
3104
3105
3106
2104
4106
4107
4108
7101
7102
7103
3101
3103
3181
3152
2136
3153
2137
2169
3158
3156
2161
3167
2163
2146
2167
3169
3155
3146
2143
3172
3154
2164
2140
2141
2132
2130
2126
3176
2149
3143
2134
2135
2124
2119
2125
2120
2131
2103
3132
K
A
C
B E
SMD jumper
41
(not all items shown in schematic diagram)
ECO6 Systems non CENELEC stage 2, 211099

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D	 IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	5	 max. f_o symmetric
			 IC 7101 40 100nF 220Rsee remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz		1494kHz	2106	5	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

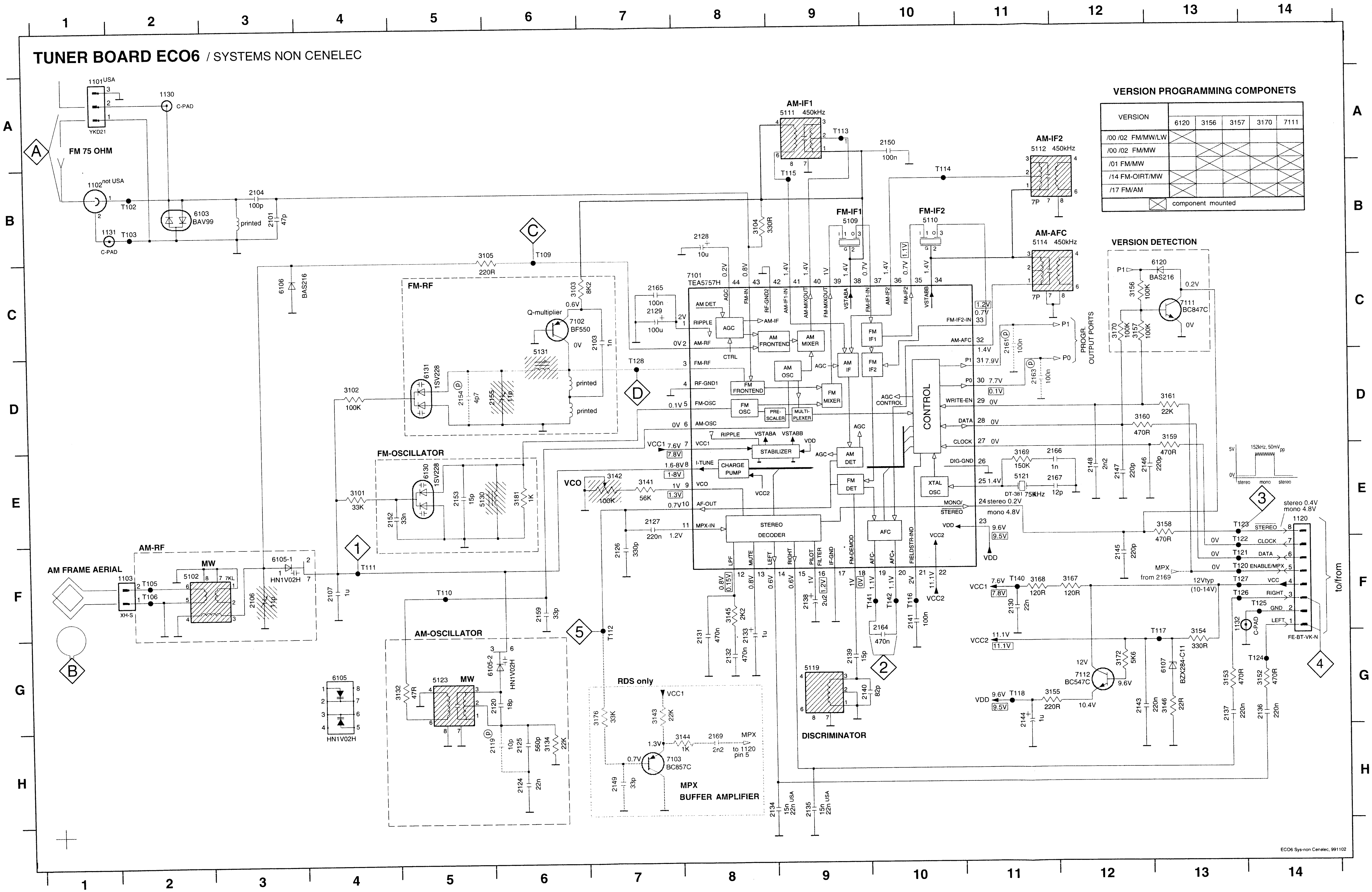
[2] RC network serves for damping the IF-filter while adjusting the other one.

[3] For AM RF adjustments the original frame antenna has to be used !

[4] MW has to be aligned before LW.

↕ Repeat

TUNER BOARD ECO6 (Non Cenelec) - CIRCUIT DIAGRAM


TUNER BOARD ECO6 / SYSTEMS NON CENELEC
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H
FM 75 OHM
1101 USA
YKD21
1130 C-PAD
1102 not USA
T102
1131 C-PAD
T103
6103 BAV99
printed
2104 100p
2101 47p
AM FRAME AERIAL
1103 XH-S
T105
T106
AM-RF
MW
5102
2106
6105-1 HN1V02H
2107 1u
T111
6105
HN1V02H
6106 BAS216
3105 220R
T109
FM-RF
3103 8K2
Q-multiplier
7102 BF550
0.6V
0V
2103 1n
5131
printed
6131 1SV228
2154 4p7
2155 10p
3102 100K
FM-OSCILLATOR
6130 1SV228
2153 15p
5130
3181 1K
2152 33n
3101 33K
T110
AM-OSCILLATOR
5123 MW
3132 47R
6105-2 HN1V02H
2120 18p
2119 10p
2125 560p
3134 22K
2124 22n
2159 33p
T112
VCO
3142 100K
3141 56K
RDS only
3176 33K
3143 22K
VCC1
3144 1K
2169 2n2
MPX to 1120 pin 5
7103 BC857C
2149 33p
MPX BUFFER AMPLIFIER
T128
3104 330R
2128 10u
2165 100n
2129 100u
7101 TEA5757H
AM DET
RIPPLE
AM-RF
FM-RF
RF-GND1
FM-OSC
AM-OSC
VCC1
I-TUNE
VCO
AF-OUT
MPX-IN
AGC
AM FRONTEND
AM MIXER
AM OSC
FM FRONTEND
FM OSC
PRE-SCALER
MULTI-PLEXER
FM MIXER
AM IF
FM IF1
FM IF2
AM DET
FM DET
AFC
STABILIZER
CHARGE PUMP
STEREO DECODER
CONTROL
XTAL OSC
AGC CONTROL
FM-IF2-IN
AM-AFC
WRITE-EN
DATA
CLOCK
DIG-GND
MONO/STEREO
VDD
VCC2
2127 220n
2126 330p
2131 470n
2132 470n
2133 1u
3145 2K2
2138 2u2
2164 470n
2139 15p
2140 82p
2141 100n
5119
DISCRIMINATOR
2134 15n 22n USA
2135 15n 22n USA
AM-IF1
5111 450kHz
T113
T115
2150 100n
T114
AM-IF2
5112 450kHz
7P
FM-IF1
5109
FM-IF2
5110
AM-AFC
5114 450kHz
2161 100n
2163 100n
P1
P0
PROGR. OUTPUT PORTS
3169 150K
2166 1n
5121 DT-381 75kHz
2167 12p
2148 2n2
2147 220p
2146 220p
3161 22K
3160 470R
3159 470R
3158 470R
2145 220p
VERSION DETECTION
6120 BAS216
3156 100K
3170 100K
3157 100K
7111 BC847C
0.2V
0V
T123
T122
T121
T120
T127
T126
T125
T124
1120
STEREO
CLOCK
DATA
ENABLE/MPX
VCC
RIGHT
GND
LEFT
FE-BT-VK-N
to/from
stereo 0.4V mono 4.8V
MPX from 2169
12Vtyp (10-14V)
1132 C-PAD
T140
3168 120R
3167 120R
2130 22n
VCC1
VCC2
T117
3154 330R
7112 BC547C
3172 5K6
6107 BZX284-C11
T118
3155 220R
2144 1u
2143 220n
3146 22R
3153 470R
3152 470R
2137 220n
2136 220n
5V
0V
152kHz, 50mVpp
stereo mono stereo
ECO6 Sys-non Cenelec, 991102

VERSION PROGRAMMING COMPONETS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒

☒ component mounted

1101	A1
1102	B1
1103	F2
1120	E14
1130	A2
1131	B1
1132	G13
2101	B3
2103	C7
2104	B3
2106	F3
2107	F4
2119	H6
2120	G6
2124	H6
2125	H6
2126	F7
2127	E7
2128	B8
2129	C7
2130	F11
2131	G8
2132	G8
2133	G8
2134	H8
2135	H9
2136	G14
2137	G13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	F12
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2152	E4
2153	E5
2154	D5
2155	D5
2159	F6
2161	C11
2163	D11
2164	F10
2165	C7
2166	E11
2167	E11
2169	H8
3101	E4
3102	D4
3103	C6
3104	B8
3105	B6
3132	G5
3134	H6
3141	E7
3142	E7
3143	G7
3144	H7
3145	F8
3146	G13
3152	G14
3153	G13
3154	G13
3155	G11
3156	C12
3157	C12
3158	E13
3159	D13
3160	D12
3161	D13
3167	F12
3168	F11
3169	E11
3170	C12
3172	G12
3176	G7
3181	E6
5102	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5119	G9
5121	E11
5123	G5
5130	E5
5131	C6
6103	B3
6105-1	F3
6105-2	G5
6106	C3
6107	G13
6120	C13
6130	E5
6131	D5
7101	C8
7102	C6
7103	H7
7111	C13
7112	G12
T102	B2
T103	B2
T105	F2
T106	F2
T109	B6
T110	F5
T111	F4
T112	F7
T113	A9
T114	B10
T115	B9
T116	F10
T117	G13
T118	G11
T120	F13
T121	F13
T122	F13
T123	E13
T124	G14

LEGEND

Ⓟ...for provision only
USA ... for USA version only

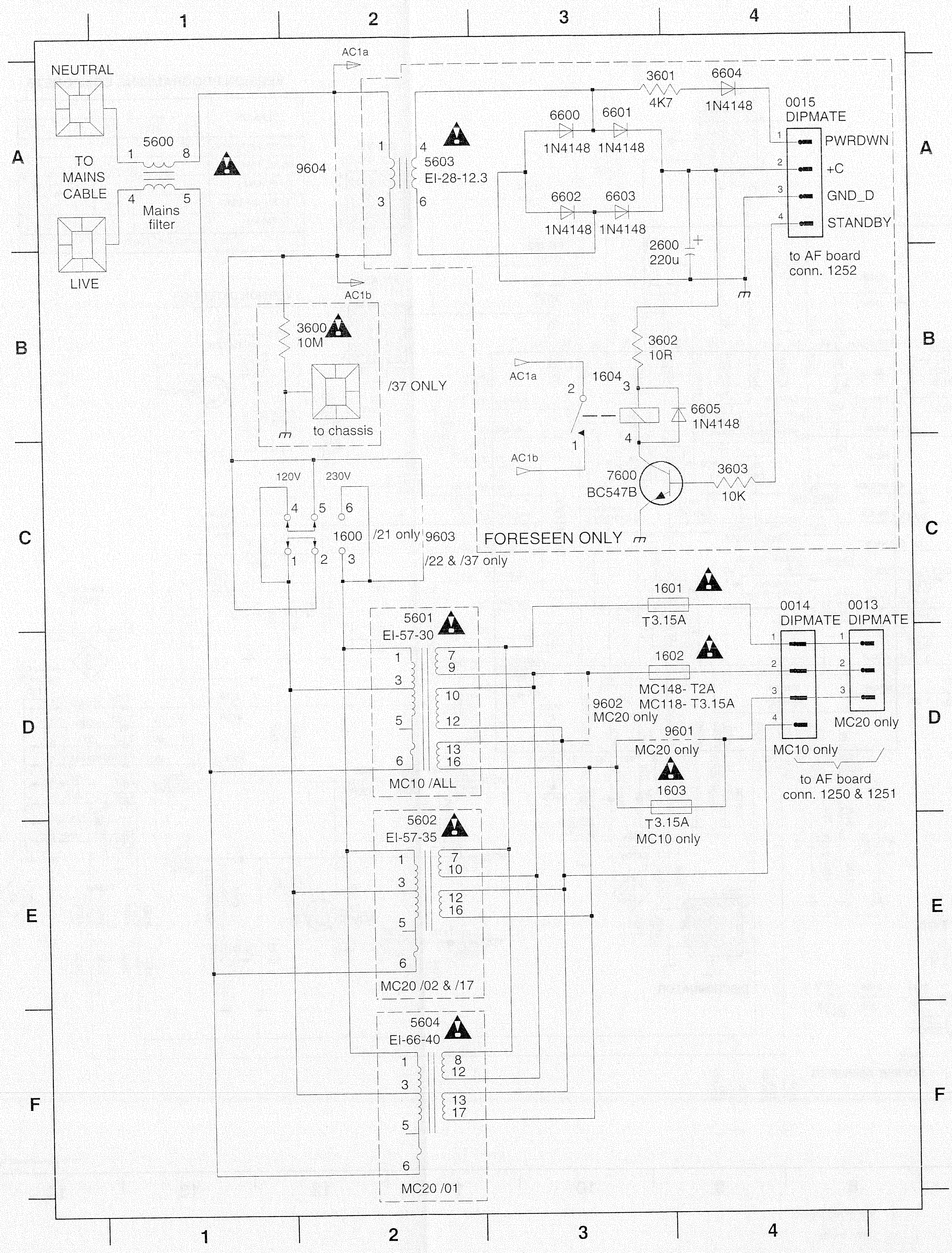
Ⓥ EVM

...V FM mode stereo
...V MW mode
...V LW mode

voltages measured while
set is tuned to a strong transmitter

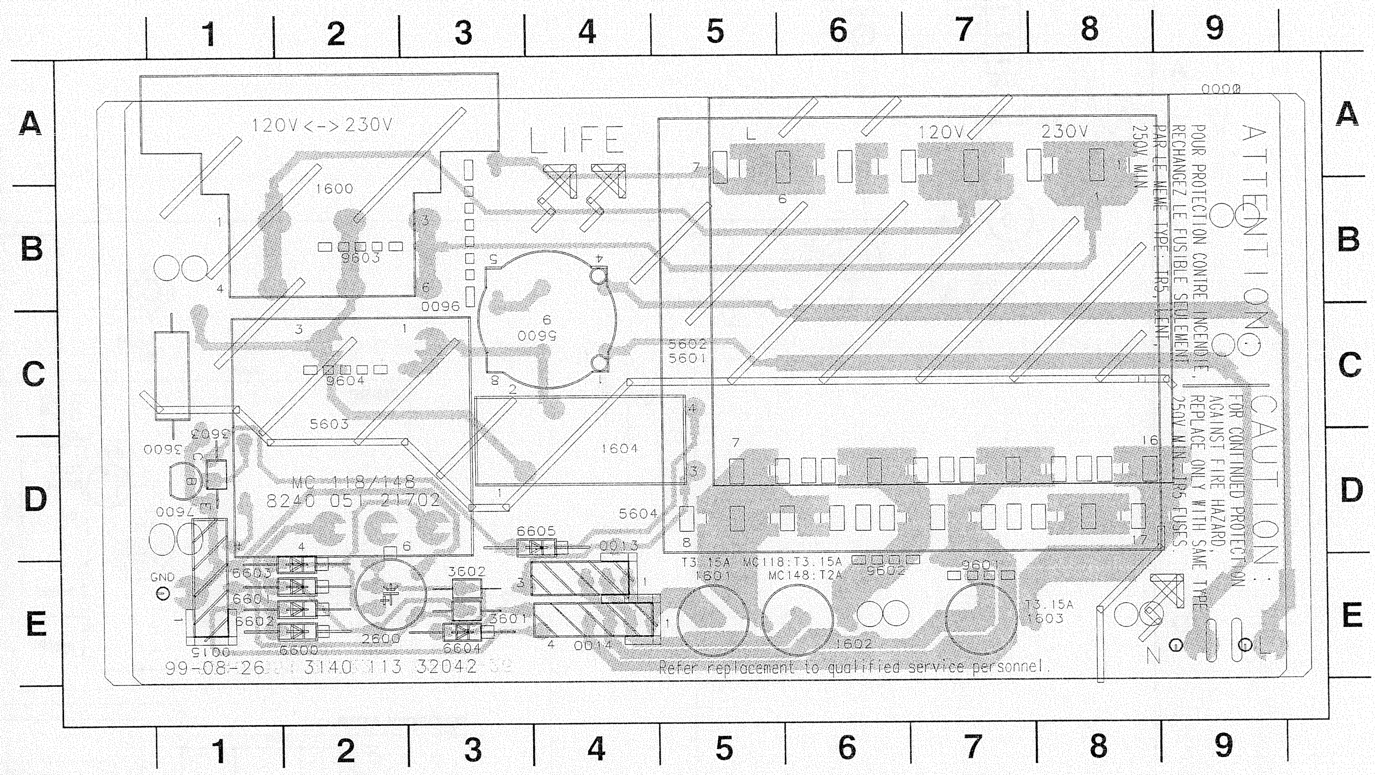
POWER BOARD - CIRCUIT DIAGRAM

0013 C4	1600 C2	1603 D3	3600 B2	3603 C4	5602 E2	6600 A3	6603 A3	7600 C3	9603 C2
0014 C4	1601 C3	1604 B3	3601 A4	5600 A1	5603 A2	6601 A3	6604 A4	9601 D4	9604 A2
0015 A4	1602 D3	2600 B3	3602 B4	5601 C2	5604 F2	6602 A3	6605 B4	9602 D3	


1
2
3
4
A
B
C
D
E
F
NEUTRAL
TO
MAINS
CABLE
LIVE
5600
Mains
filter
AC1a
AC1b
9604
5603
EI-28-12.3
3601
4K7
6604
1N4148
6600
6601
1N4148
6602
6603
0015
DIPMATE
PWRDWN
+C
GND_D
STANDBY
to AF board
conn. 1252
2600
220u
3600
10M
to chassis
/37 ONLY
3602
10R
1604
6605
1N4148
7600
BC547B
3603
10K
120V
230V
1600
/21 only
9603
/22 & /37 only
FORESEEN ONLY
1601
T3.15A
5601
EI-57-30
MC10 /ALL
1602
MC148- T2A
MC118- T3.15A
9602
MC20 only
9601
MC20 only
1603
T3.15A
MC10 only
0014
DIPMATE
0013
DIPMATE
MC20 only
MC10 only
to AF board
conn. 1250 & 1251
5602
EI-57-35
MC20 /02 & /17
5604
EI-66-40
MC20 /01

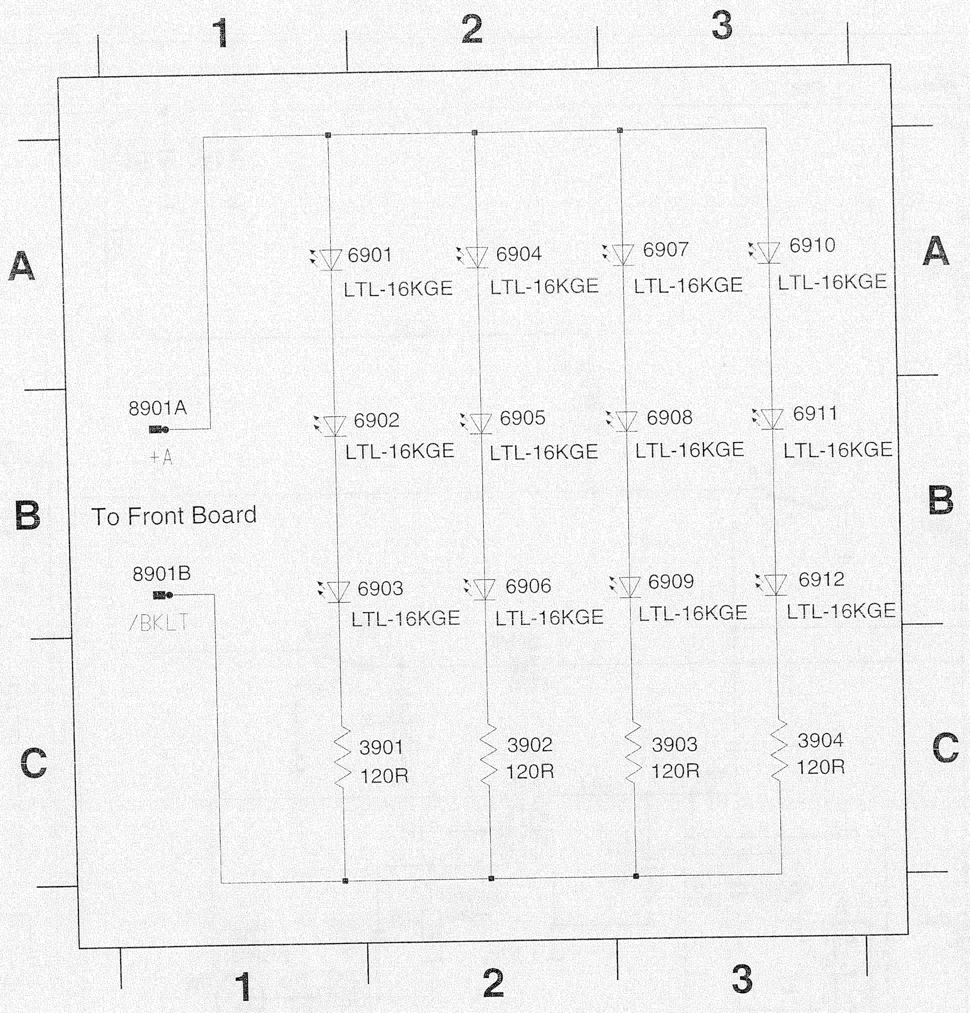
POWER BOARD - LAYOUT DIAGRAM

0000 A9	0015 E1	1604 D4	3603 C1	5604 D4	6604 E3	9602 E6
0001 A9	1600 B2	2600 E2	5600 C4	6600 E2	6605 D4	9603 B2
0002 A9	1601 E5	3600 D1	5601 C5	6601 E1	7600 D1	9604 C2
0013 D4	1602 E6	3601 E3	5602 C5	6602 E1	9600 B3	
0014 E4	1603 E8	3602 E3	5603 C2	6603 E1	9601 E7	

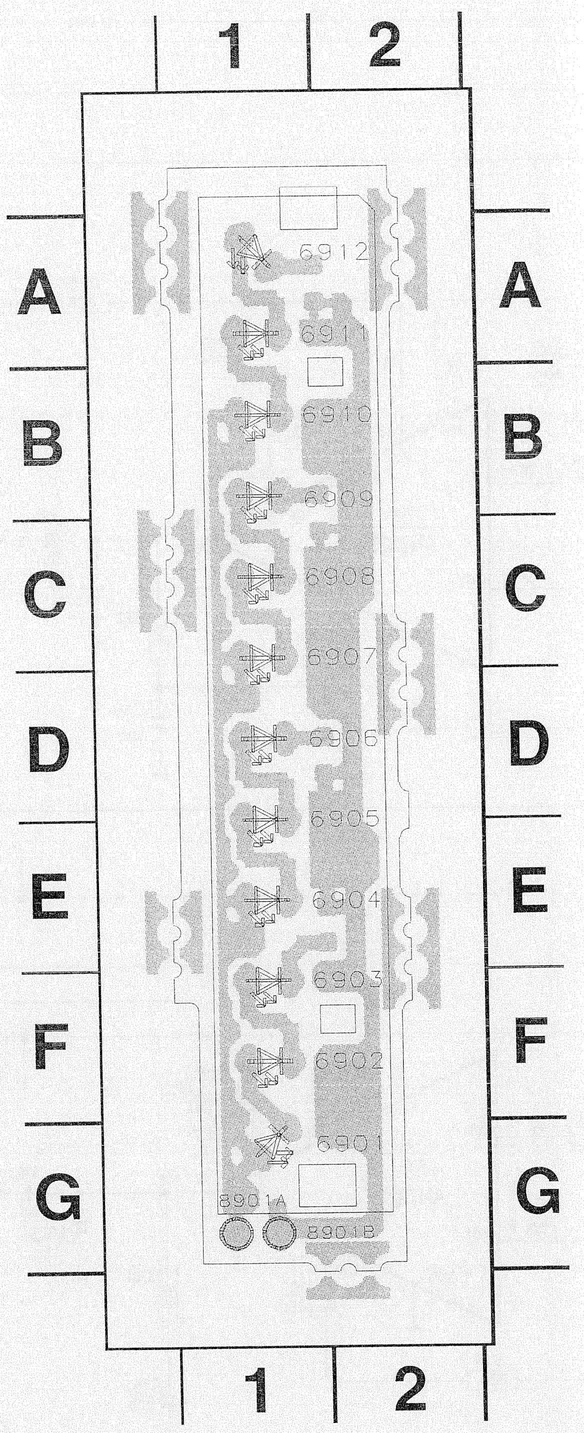

1
2
3
4
5
6
7
8
9
A
B
C
D
E
120V<->230V
LIFE
120V
230V
1600
9603
9604
5603
5600
1604
5604
5602
5601
MC 118/148
8240 05
6605
0013
0014
1601
1602
1603
9602
9601
3602
3601
2600
6600
6604
T3.15A
MC118:T3.15A
MC148:T2A
GND
99-08-26
3140 113 32042
Refer replacement to qualified service personnel.
ATTENTION
POUR PROTECTION CONTRE INCENDIE REMPLACE LE FUSIBLE SEULEMENT PAR LE MEME TYPE 250V MIN.
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 250V MIN. FUSES.

LED BOARD - CIRCUIT DIAGRAM

3901	C1
3902	C2
3903	C3
3904	C3
6901	A1
6902	B1
6903	B1
6904	A2
6905	B2
6906	B2
6907	A2
6908	B2
6909	B2
6910	A3
6911	B3
6912	B3
8901A	B1
8901B	B1


1
2
3
A
B
C
6901
6904
6907
6910
6902
6905
6908
6911
6903
6906
6909
6912
LTL-16KGE
8901A
+A
To Front Board
8901B
/BKLT
3901
120R
3902
120R
3903
120R
3904
120R

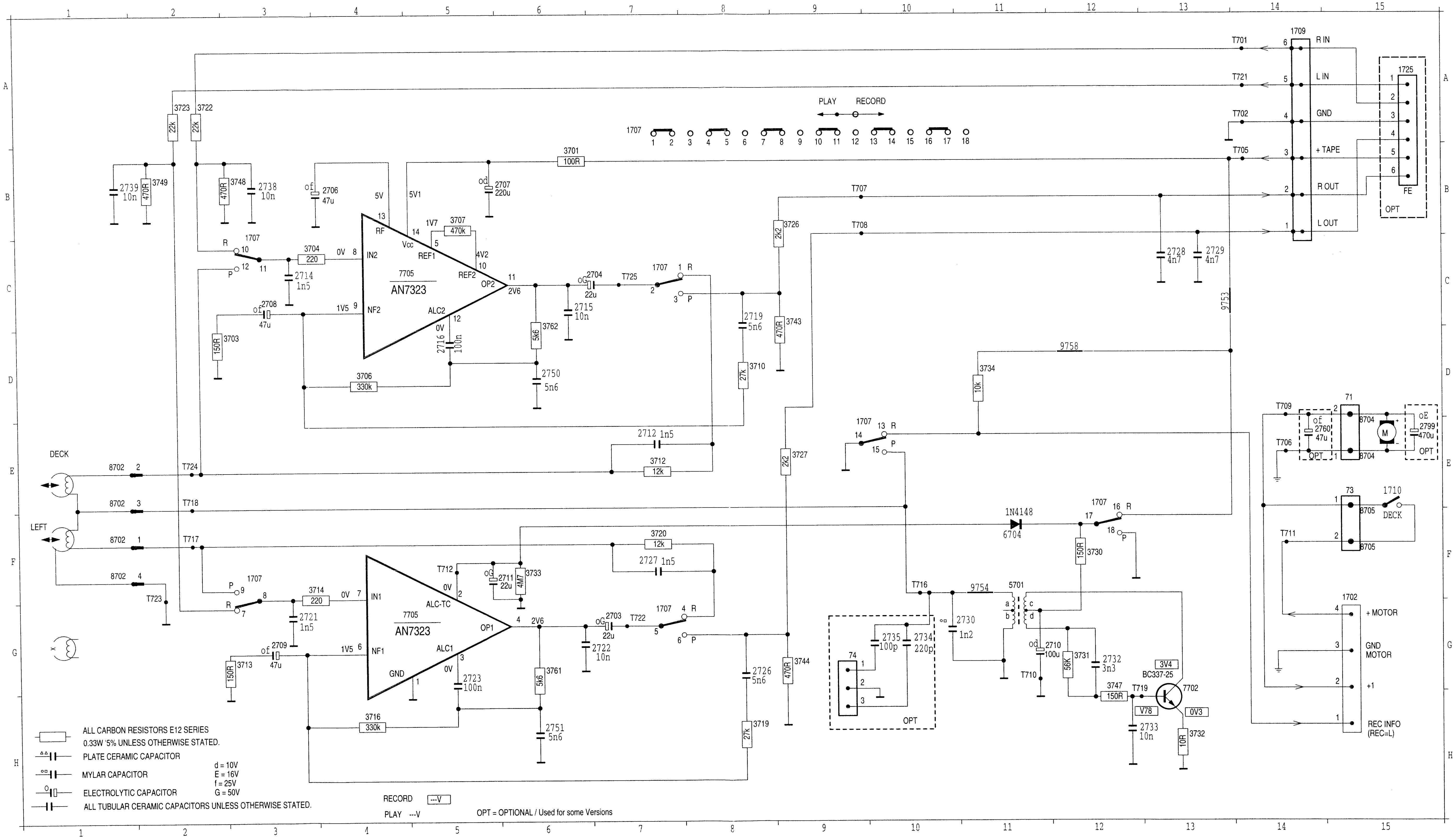
LED BOARD - LAYOUT DIAGRAM


1
2
A
B
C
D
E
F
G
6912
6911
6910
6909
6908
6907
6906
6905
6904
6903
6902
6901
8901A
8901B

6901	G2
6902	F2
6903	F2
6904	E2
6905	D2
6906	D2
6907	C2
6908	C2
6909	B2
6910	B2
6911	A2
6912	A2
8901A	G1
8901B	G2

RECORDER BOARD - CIRCUIT DIAGRAM

71	D15
73	E15
74	G 9
1702	G15
1707	F 3
1707	C 3
1707	G 7
1707	C 7
1707	E 9
1707	E12
1709	A14
1710	E15
1725	A15
2703	G 7
2704	C 7
2706	B 4
2707	B 6
2708	C 3
2709	G 3
2710	G12
2711	F 6
2712	E 7
2714	C 3
2715	C 6
2716	D 5
2719	C 8
2721	G 3
2722	G 7
2723	G 5
2726	G 8
2727	F 7
2728	C13
2729	C13
2730	G11
2732	G12
2733	H13
2734	G10
2735	G10
2738	B 3
2739	B 1
2750	D 6
2751	H 6
2760	E14
2799	E15
3701	B 6
3703	D 3
3704	C 3
3706	D 4
3707	B 5
3710	D 8
3712	E 7
3713	G 3
3714	F 3
3716	H 4
3719	H 8
3720	F 7
3722	A 2
3723	A 2
3726	B 9
3727	E 9
3730	F12
3731	G12
3732	H13
3733	F 6
3734	D11
3743	C 9
3744	G 9
3747	G12
3748	B 3
3749	B 2
3761	G 6
3762	D 6
5701	F11
6704	F11
7702	H13
7705	G 4
7705	C 4
8702	F 1
8702	F 1
8702	E 1
8702	E 1
8704	E15
8704	E15
8705	F15
8705	F15
9753	C13
9754	F11
9758	D12
T701	A14
T702	A14
T705	B14
T706	E14
T707	B10
T708	B10
T709	D14
T710	G11
T711	F14
T712	F 5
T716	F10
T717	F 2
T718	E 2
T719	H13
T721	A14
T722	G 7
T723	F 2
T724	E 2
T725	C 7


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H
T701
T721
T702
T705
T707
T708
1709
R IN
L IN
GND
+ TAPE
R OUT
L OUT
1725
FE
OPT
PLAY
RECORD
1707
3723
3722
22k
22k
2739 10n
3749 470R
3748 470R
2738 10n
2706 47u
5V
5V1
3701 100R
2707 220u
1V7
3707 470k
7705
AN7323
RF
Vcc
IN2
REF1
REF2
OP2
NF2
ALC2
4V2
2V6
3704 220
0V
2714 1n5
2708 47u
1V5
3703 150R
2716 100n
3706 330k
2704 22u
T725
2715 10n
3762 5k6
2750 5n6
2712 1n5
3712 12k
2719 5n6
3710 27k
3726 2k2
3743 470R
2728 4n7
2729 4n7
9753
9758
3734 10k
3727 2k2
DECK
LEFT
8702
T724
T718
T717
T723
1N4148
6704
3730 150R
1710
DECK
T709
T706
2760 47u
71
8704
M
2799 470u
73
8705
T711
1702
+ MOTOR
GND MOTOR
+1
REC INFO (REC=L)
3720 12k
2727 1n5
T712
2711 22u
3733 4M7
3714 220
IN1
ALC-TC
OP1
NF1
ALC1
GND
2721 1n5
2709 47u
3713 150R
2703 22u
T722
2722 10n
3761 5k6
2723 100n
2751 5n6
3716 330k
2726 5n6
3719 27k
3744 470R
T716
9754
5701
2730 1n2
74
2735 100p
2734 220p
2710 100u
T710
3731 56K
2732 3n3
3V4
BC337-25
7702
3747 150R
T719
V78
0V3
2733 10n
3732 10R

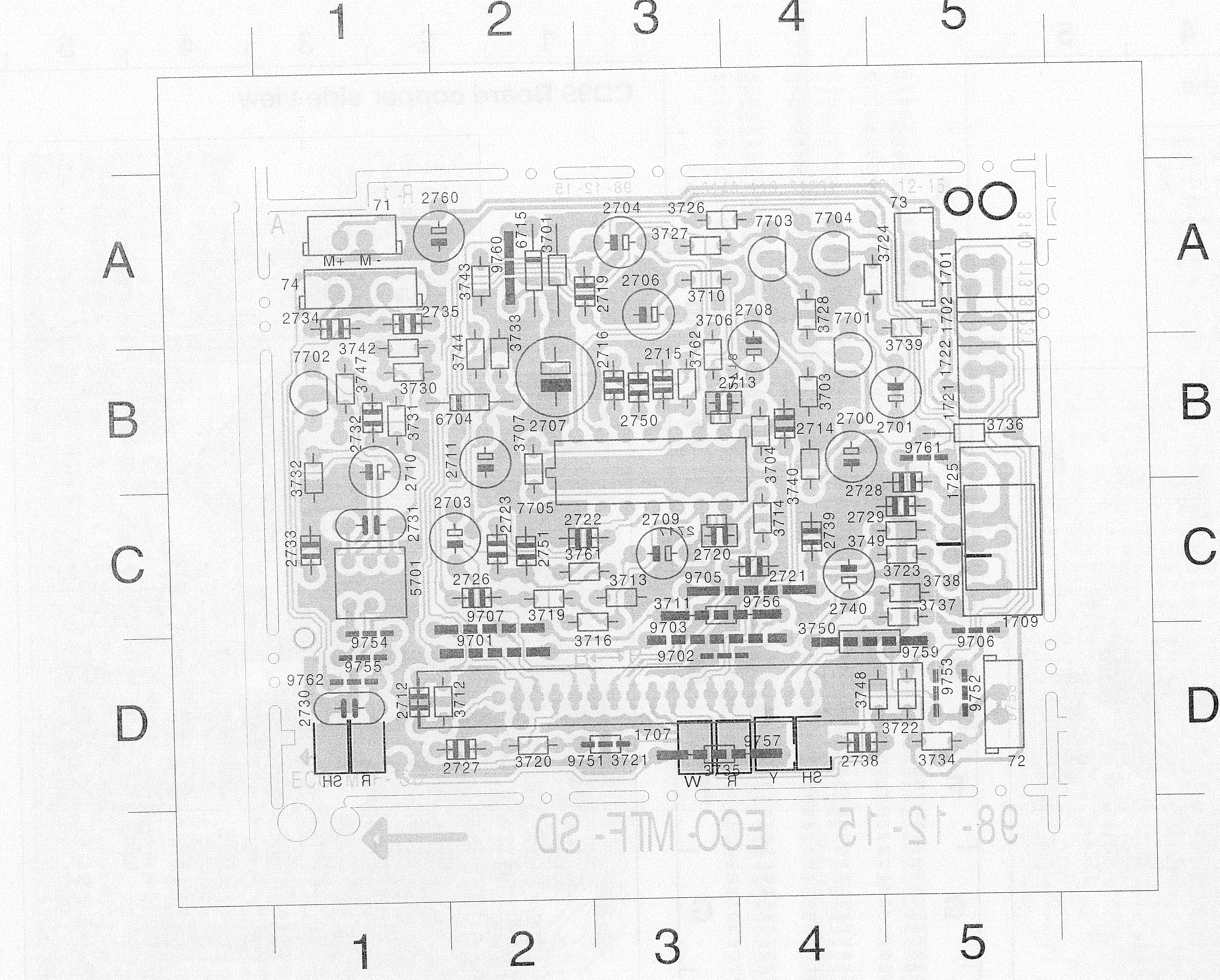
ALL CARBON RESISTORS E12 SERIES
0.33W 5% UNLESS OTHERWISE STATED.
PLATE CERAMIC CAPACITOR
MYLAR CAPACITOR
ELECTROLYTIC CAPACITOR
ALL TUBULAR CERAMIC CAPACITORS UNLESS OTHERWISE STATED.

d = 10V
E = 16V
f = 25V
G = 50V

RECORD --V
PLAY ---V

OPT = OPTIONAL / Used for some Versions

RECORER BOARD - LAYOUT DIAGRAM


1
2
3
4
5
A
B
C
D
71
2760
2704
3726
7703
7704
73
74
M+
M-
2734
2735
3742
7702
3747
3730
6704
3743
9760
6715
3701
3733
3744
2719
2706
3727
3710
3706
2708
3728
7701
3724
1701
1702
1722
1721
3739
2716
2715
3762
2713
2707
2750
3703
2714
2700
2701
3736
9761
1725
2732
3731
2710
2711
3707
3704
3740
3714
2728
2729
3749
3732
2733
2731
2703
2723
7705
2722
2709
2720
2739
3723
3738
3737
2751
3761
2726
5701
3713
9705
2721
2740
9707
3719
3711
9756
9754
9701
3716
9703
3750
9706
1709
9755
9702
9759
9762
2730
2712
3712
3748
9753
9752
2727
3720
9751
3721
1707
9757
3735
2738
3722
3734
72
W
R
Y
HS
98-12-15
ECO-MTF-SD

71	A	1
72	D	5
73	A	5
74	A	1
1701	A	5
1702	B	5
1707	D	3
1709	C	5
1721	B	5
1722	B	5
1725	C	5
2700	B	4
2701	B	5
2703	C	2
2704	A	3
2706	A	3
2707	B	2
2708	B	4
2709	C	3
2710	B	1
2711	B	2
2712	D	1
2713	B	3
2714	B	4
2715	B	3
2716	B	3
2717	C	3
2718	B	3
2719	A	3
2720	C	3
2721	C	4
2722	C	2
2723	C	2
2726	C	2
2727	D	2
2728	C	5
2729	C	5
2730	D	1
2731	C	1
2732	B	1
2733	C	1
2734	A	1
2735	A	1
2738	D	4
2739	C	4
2740	C	4
2750	B	3
2751	C	2
2760	A	2
3701	A	2
3703	B	4
3704	B	4
3706	B	3
3707	B	2
3710	A	3
3711	C	3
3712	D	1
3713	C	3
3714	C	4
3716	C	3
3719	C	2
3720	D	2
3721	D	3
3722	D	5
3723	C	5
3724	A	5
3726	A	3
3727	A	3
3728	A	4
3730	B	1
3731	B	1
3732	B	1
3733	B	2
3734	D	5
3735	D	3
3736	B	5
3737	C	5
3738	C	5
3739	A	5
3740	B	4
3742	B	1
3743	A	2
3744	B	2
3747	B	1
3748	D	4
3749	C	5
3750	D	4
3761	C	2
3762	B	3
5701	C	1
6704	B	2
6715	A	2
7701	B	4
7702	B	1
7703	A	4
7704	A	4
7705	B	3
9701	D	2
9702	D	3
9703	D	3
9705	C	4
9706	D	5
9707	C	2
9751	D	3
9752	D	5
9753	D	5
9754	C	1
9755	D	1
9756	C	3
9757	D	3
9759	D	4
9760	A	2
9761	B	5
9762	D	1
T701	C	5
T702	C	5
T705	B	5
T706	B	5
T709	A	5
T710	C	1
T711	B	5
T712	C	2
T713	A	5
T714	D	5
T715	D	5
T716	D	1
T719	B	1
T720	A	5
T721	C	5
T722	C	2
T725	D	2
T7707	A	4
T7708	A	4

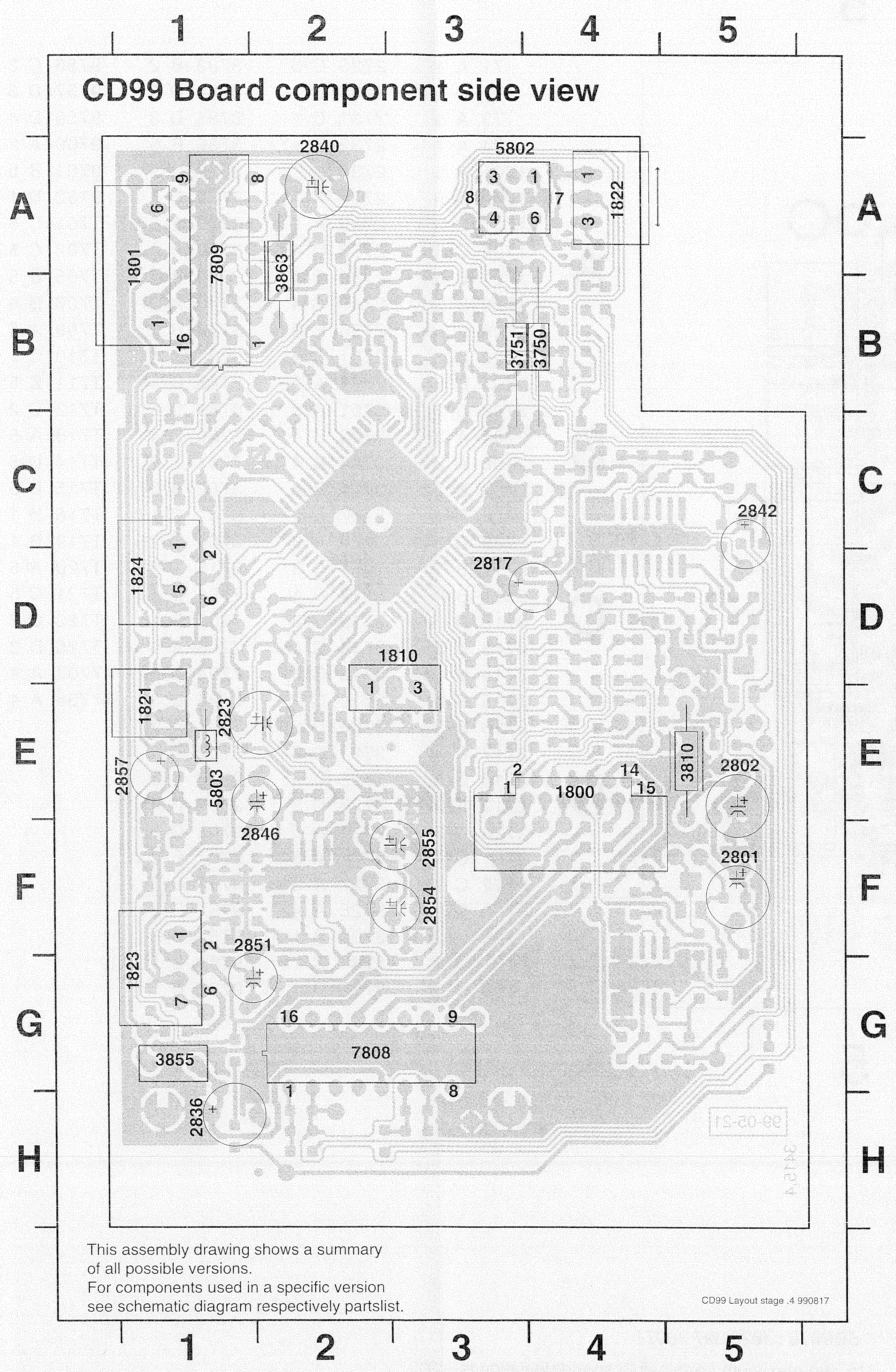
CASSETTE ADJUSTMENT

Adjustment	Cassette	SK	Deck 1	Measure on	Read on	Adjust with	Adjust to
Azimuth	10 kHz SBC420*	Tape	Play	H/P Jack	mV meter	Left hand Screw R/P head	max.
Motor Speed	3150 kHz SBC420*	Tape	Play	H/P Jack	Wow and flutter meter	Preset in motor	**a

* SBC420 : 4822 397 30071

**a The maximum permissible speed deviation is ± 3%.
Morever, the wow and flutter value can be read.

CD99 DA11 - LAYOUT DIAGRAM


1
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A
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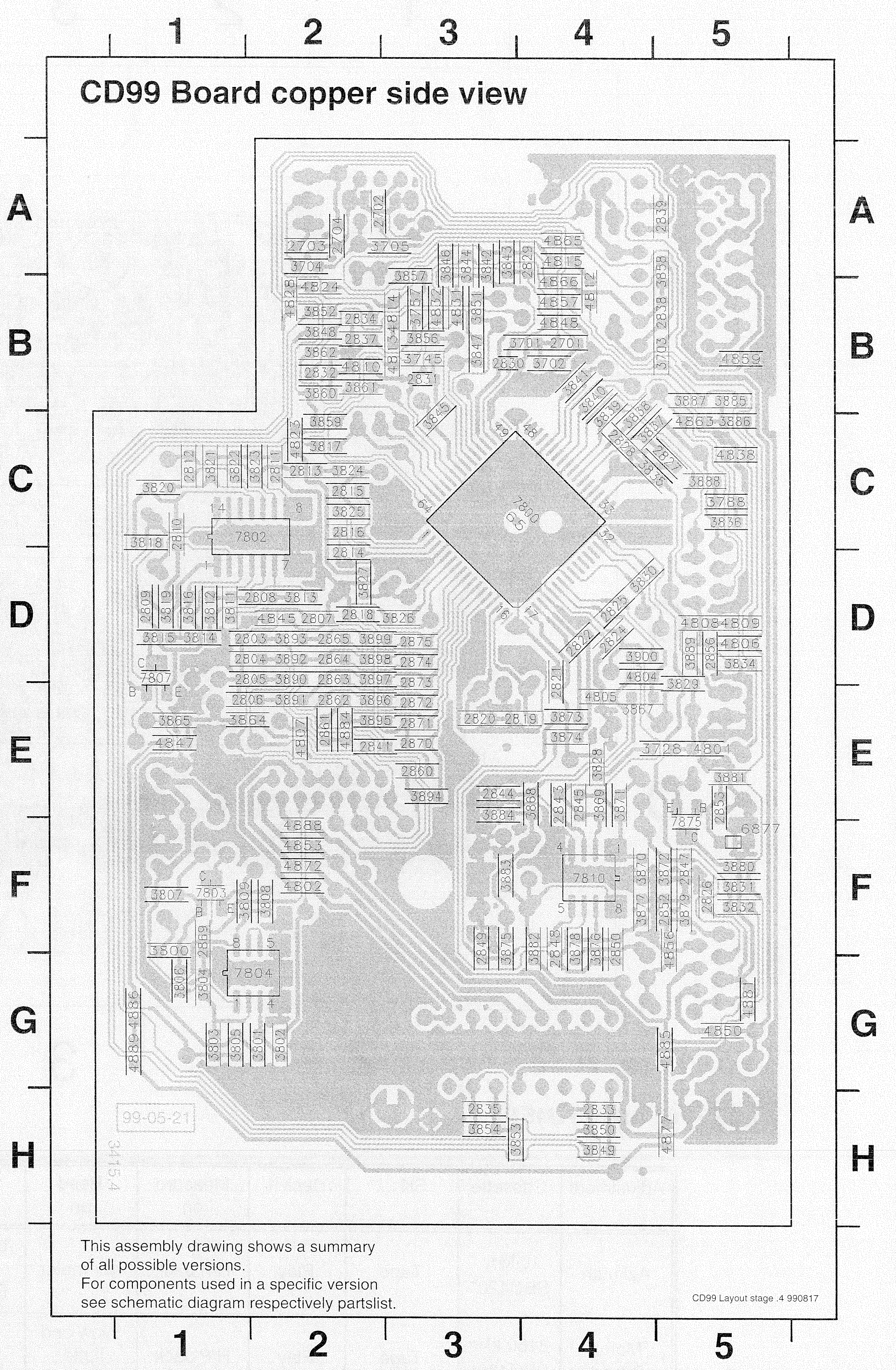
CD99 Board component side view
2840
5802
1822
1801
7809
3863
3751
3750
1824
2842
2817
1810
1821
2823
2857
5803
2846
1800
3810
2802
2855
2854
2801
1823
2851
3855
7808
2836
99-05-21
3415.4
CD99 Layout stage .4 990817

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

1800	F2	3703	B5	3876	F4
1801	A5	3704	A2	3877	F4
1810	D3	3705	A3	3878	F4
1821	E5	3728	E5	3879	F5
1822	A2	3745	B3	3880	F5
1823	G5	3750	B2	3881	E5
1824	D5	3751	B2	3882	F4
2701	B4	3757	B3	3883	F3
2702	A2	3788	C5	3884	E3
2703	A2	3800	F1	3885	B5
2704	A2	3801	G2	3886	C5
2801	F1	3802	G2	3887	B5
2802	E1	3803	G1	3888	C5
2803	D2	3804	G1	3889	D5
2804	D2	3805	G1	3890	D2
2805	D2	3806	G1	3891	E2
2806	E1	3807	F1	3892	D2
2807	D2	3808	F2	3893	D2
2808	D2	3809	F1	3894	E3
2809	D1	3810	E1	3895	E2
2810	C1	3811	D1	3896	E2
2811	C2	3812	D1	3897	D2
2812	C1	3813	D2	3898	D2
2813	C2	3814	D1	3899	D2
2814	D2	3815	D1	3900	D4
2815	C2	3816	D1	4801	E5
2816	C2	3817	C2	4802	F2
2817	D2	3818	C1	4804	D4
2818	D2	3819	D1	4805	E4
2819	E4	3820	C1	4806	D5
2820	E3	3821	C1	4807	E2
2821	D4	3822	C1	4808	D5
2822	D4	3823	C2	4809	D5
2823	E4	3824	C2	4810	B2
2824	D4	3825	C2	4812	B4
2825	D4	3826	D3	4813	B3
2826	F5	3827	D2	4814	B3
2827	C5	3828	E4	4815	A4
2828	C4	3829	D5	4823	C2
2829	A4	3830	D4	4824	B2
2830	B3	3831	F5	4828	B2
2831	B3	3832	F5	4831	B3
2832	B2	3834	D5	4832	B3
2833	H4	3835	C4	4838	C5
2834	B2	3836	C5	4845	D2
2835	H3	3837	C4	4847	E1
2836	G5	3838	C4	4848	B4
2837	B2	3839	C4	4850	G5
2838	B5	3840	B4	4853	F2
2839	A5	3841	B4	4856	F5
2840	A4	3842	A3	4857	B4
2841	E2	3843	A3	4859	B5
2842	C1	3844	A3	4863	C5
2843	E4	3845	C3	4865	A4
2844	E3	3846	A3	4866	B4
2845	E4	3847	B3	4872	F2
2846	E4	3848	B2	4877	H5
2847	F5	3849	H4	4881	G5
2848	F4	3850	H4	4884	E2
2849	F3	3851	B3	4885	G5
2850	F4	3852	B2	4886	G1
2851	G4	3853	H3	4888	F2
2852	F5	3854	H3	4889	G1
2853	E5	3855	G5	5802	A2
2854	F3	3856	B3	5803	E5
2855	E3	3857	B3	6877	F5
2856	D5	3858	A5	7800	C4
2857	E5	3859	C2	7802	C2
2860	E3	3860	B2	7803	F1
2861	E2	3861	B2	7804	G2
2862	E2	3862	B2	7807	D1
2863	D2	3863	A4	7808	G4
2864	D2	3864	E1	7809	A5
2865	D2	3865	E1	7810	F4
2869	F1	3867	E4	7875	F5
2870	E3	3868	E4	8401	H3
2871	E3	3869	E4	8402	H5
2872	E3	3870	F4		
2873	D3	3871	E4		
2874	D3	3872	F5		
2875	D3	3873	E4		
3701	B4	3874	E4		
3702	B4	3875	F3		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CD99 Board copper side view
2702
2703
2704
3705
3704
4824
4865
4815
4866
4857
4848
2839
3852
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3862
2832
3860
3857
3757
3745
2834
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4810
3861
3856
2831
3701
2701
2830
3702
3703
4859
3887
3885
4863
3886
4838
3859
3817
2813
3824
2815
3825
2816
2814
3827
3820
3818
7802
7800
3888
3788
3836
2808
3813
4845
2807
2818
3826
3815
3814
2803
3893
2865
3899
2875
2804
3892
2864
3898
2874
2805
3890
2863
3897
2873
2806
3891
2862
3896
2872
7807
3864
3865
4847
2861
2870
2841
2860
3894
2820
2819
3873
3874
4808
4809
4806
3834
3900
4804
3829
4805
3867
3728
4801
3881
2844
3884
7875
6877
4888
4853
4872
4802
7810
3880
3831
3832
3807
7803
3800
7804
3806
3803
3805
3801
3802
4889
4886
2849
2848
2850
4856
3881
4850
4835
2835
3854
3853
2833
3850
3849
4877
99-05-21
3415.4
CD99 Layout stage .4 990817

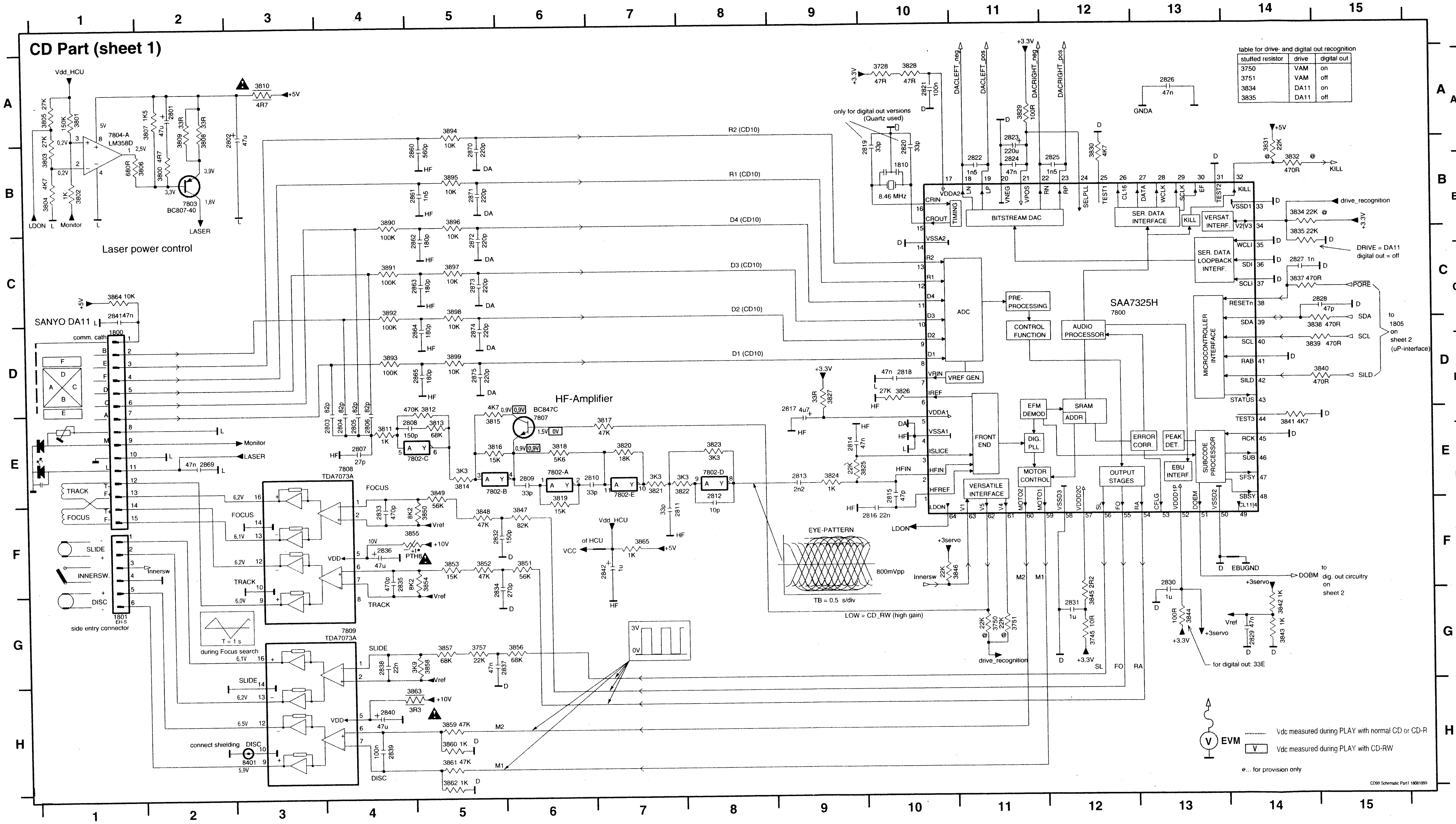
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CD99 DA11 - CIRCUIT DIAGRAM

1800	D1
1801	G1
2801	A2
2802	A3
2803	E4
2804	E4
2805	E4
2806	E4
2807	E4
2808	E4
2809	E6
2810	E6
2811	F7
2812	E8
2813	E9
2814	E9
2815	E10
2816	F10
2817	D9
2818	D9
2819	B10
2820	B10
2821	B11
2822	B11
2823	B11
2824	B11
2825	B12
2826	A13
2827	C14
2828	C14
2829	G14
2830	F13
2831	G12
2832	F5
2833	F4
2834	F5
2835	F4
2836	F4
2837	G5
2838	G4
2839	H4
2840	H4
2841	C1
2842	F7
2860	B5
2861	B5
2862	C5
2863	C5
2864	D5
2865	D5
2869	E2
2870	B5
2871	B5
2872	C5
2873	C5
2874	D5
2875	D5
3728	A10
3745	G12
3750	G11
3751	G11
3757	G5
3800	B2
3801	A1
3802	B1
3803	B1
3804	B1
3805	A1
3806	B2
3807	A2
3808	A2
3809	A2
3810	A3
3811	E4
3812	D5
3813	E5
3814	E5
3815	E5
3816	E5
3817	E7
3818	E6
3819	E6
3820	E7
3821	E7
3822	E7
3823	E8
3824	E9
3825	E9
3826	D10
3827	D9
3828	A10
3829	A11
3830	B12
3831	B14
3832	B14
3834	B14
3835	C14
3837	C14
3838	D14
3839	D14
3840	D15
3841	E14
3842	G14
3843	G14
3844	G13
3845	G12
3846	F10
3847	F6
3848	F5
3849	E5
3850	F5
3851	F6
3852	F5
3853	F5
3854	F5
3855	F4
3856	G6
3857	G5
3858	G5
3859	H5
3860	H5
3861	H5
3862	H5
3863	H4
3864	C1
3865	F7
3890	B4
3891	C4
3892	C4
3893	D4
3894	A5
3895	B5
3896	B5
3897	C5
3898	C5
3899	D5
7800	D12
7802-A	E6
7802-B	E5
7802-C	E5
7802-D	E8
7802-E	E7
7802-F	F8
7803	B2
7804-A	A1
7804-B	C3
7807	E6
7808	E4
7809	G4
8401	H3

1821	D10
1822	E4
1823	B10
1824	D10
2701	E2
2702	E2
2703	E4
2704	E3
2843	A5
2844	A5
2845	A6
2846	A7
2847	A8
2848	C5
2849	C5
2850	B6
2851	C7
2852	C8
2853	E6
2854	D6
2855	D6
2856	E10
2857	E6
3701	E1
3702	E2
370	
370	
370	
378	
383	

CD Part (sheet 1)



Laser power control
Vdd_HCU
LDON
Monitor
LASER
7804-A LM358D
7803 BC807-40
SANYO DA11
comm. cath.
1800
1801
side entry connector
SLIDE
INNERSW.
DISC
TRACK
FOCUS
Monitor
LASER
7809 TDA7073A
7808 TDA7073A
during Focus search
T = 1 s
connect shielding
8401
HF-Amplifier
BC847C 7807
7802-A
7802-B
7802-C
7802-D
7802-E
R2 (CD10)
R1 (CD10)
D4 (CD10)
D3 (CD10)
D2 (CD10)
D1 (CD10)
EYE-PATTERN
800mVpp
TB = 0.5 s/div
LOW = CD_RW (high gain)
only for digital out versions (Quartz used)
8.46 MHz
1810
DACLEFT_neg
DACLEFT_pos
DACRIGHT_neg
DACRIGHT_pos
GNDA
SAA7325H
7800
BITSTREAM DAC
TIMING
ADC
PRE-PROCESSING
CONTROL FUNCTION
AUDIO PROCESSOR
VREF GEN.
FRONT END
EFM DEMOD
SRAM
ADDR
DIG. PLL
MOTOR CONTROL
VERSATILE INTERFACE
OUTPUT STAGES
ERROR CORR.
PEAK DET.
EBU INTERF.
SUBCODE PROCESSOR
MICROCONTROLLER INTERFACE
SER. DATA INTERFACE
SER. DATA LOOPBACK INTERF.
KILL
VERSAT. INTERF.
drive_recognition
DRIVE = DA11 digital out = off
to 1805 on sheet 2 (uP-interface)
SDA
SCL
SILD
PORE
KILL
to dig. out circuitry on sheet 2
DOBM
EBUGND
drive_recognition
for digital out: 33E
Innersw

table for drive- and digital out recognition

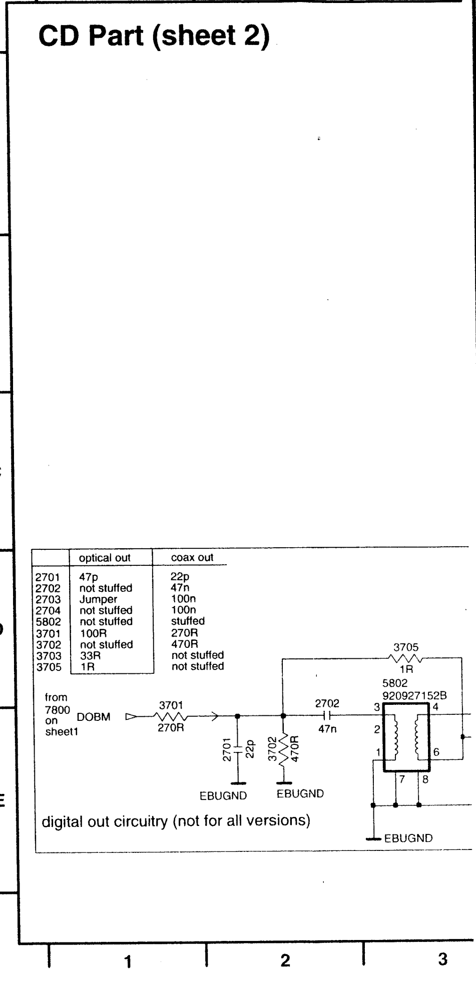
stuffed resistor	drive	digital out
3750	VAM	on
3751	VAM	off
3834	DA11	on
3835	DA11	off

EVM .... Vdc measured during PLAY with normal CD or CD-R

V Vdc measured during PLAY with CD-RW

e... for provision only

CD Part (sheet 2)



from 7800 on sheet1
DOBM
3701 270R
2701 22p
3702 470R
2702 47n
5802 920927152B
3705 1R
EBUGND

	optical out	coax out
2701	47p	22p
2702	not stuffed	47n
2703	Jumper	100n
2704	not stuffed	100n
5802	not stuffed	stuffed
3701	100R	270R
3702	not stuffed	470R
3703	33R	not stuffed
3705	1R	not stuffed

digital out circuitry (not for all versions)

29	A11
30	B12
31	B14
32	B14
34	B14
35	C14
37	C14
3838	D14
3839	D14
3840	D15
3841	E14
3842	G14
3843	G14
3844	G13
3845	G12
3846	F10
3847	F6
3848	F5
3849	E5
3850	F5
3851	F6
3852	F5
3853	F5
3854	F5
3855	F4
3856	G6
3857	G5
3858	G5
3859	H5
3860	H5
3861	H5
3862	H5
3863	H4
3864	C1
3865	F7
3890	B4
3891	C4
3892	C4
3893	D4
3894	A5
3895	B5
3896	B5
3897	C5
3898	C5
3899	D5
7800	D12
7802-A	E6
7802-B	E5
7802-C	E5
7802-D	E8
7802-E	E7
7802-F	F8
7803	B2
7804-A	A1
7804-B	C3
7807	E6
7808	E4
7809	G4
8401	H3

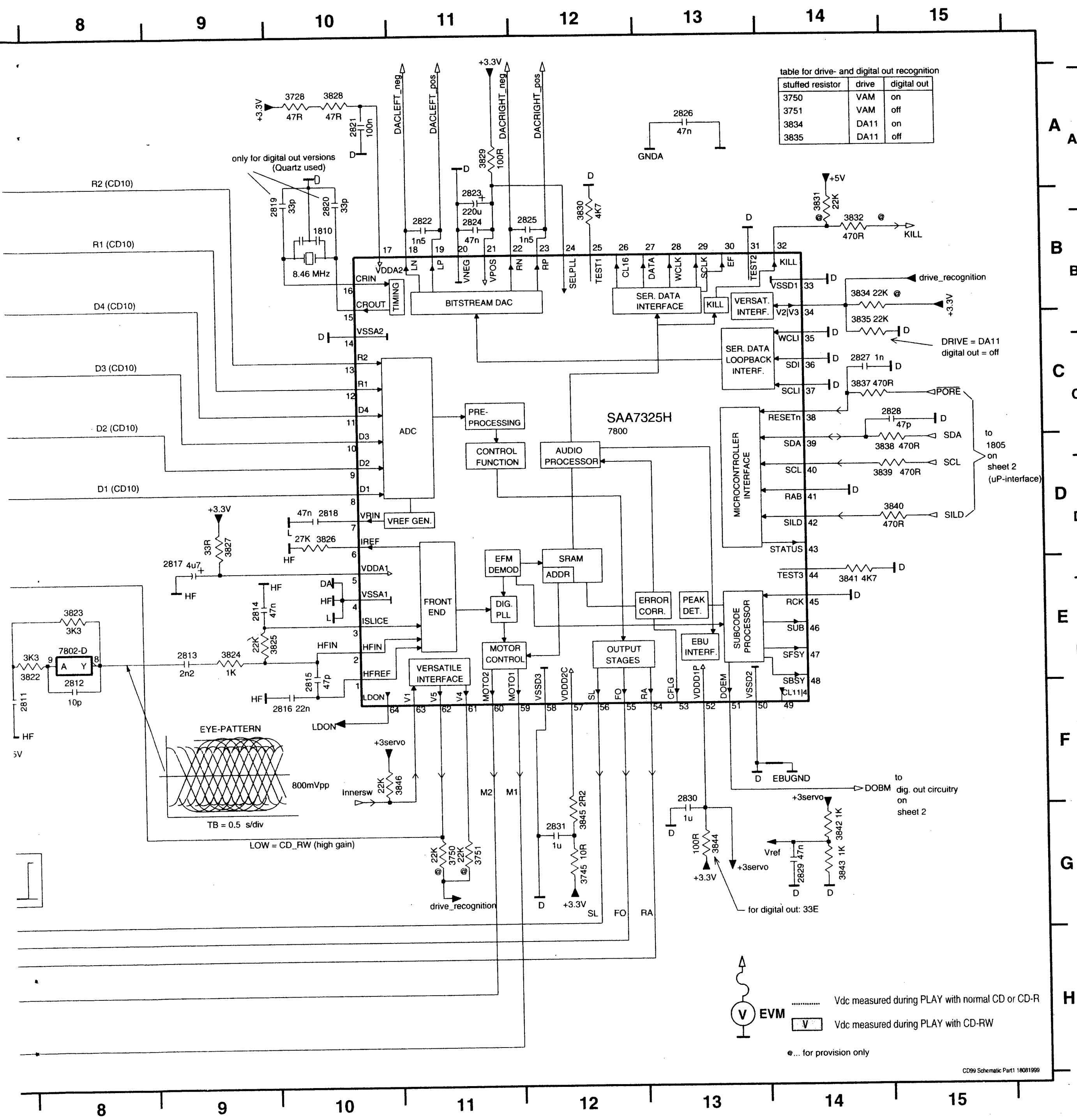
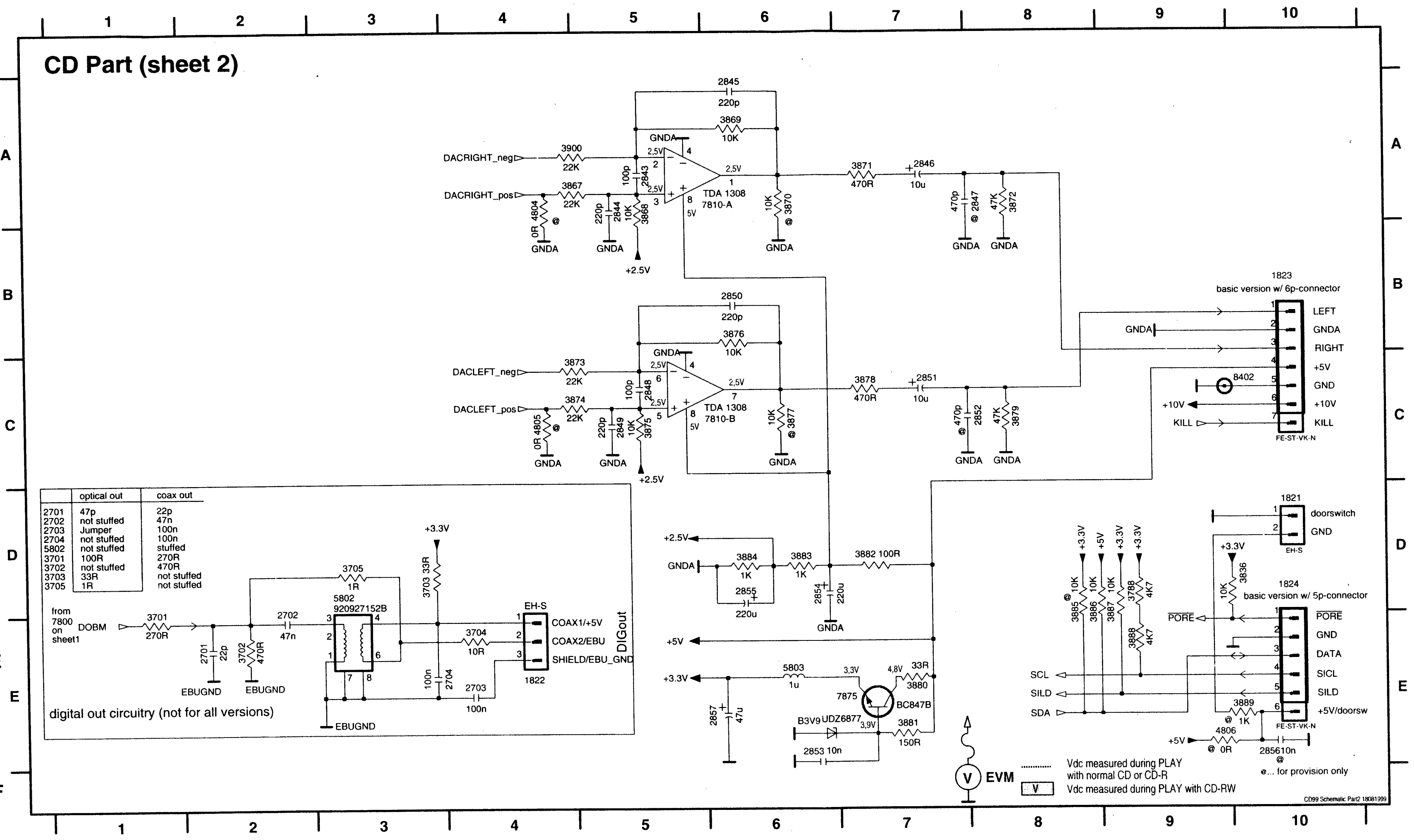


table for drive- and digital out recognition

stuffed resistor	drive	digital out
3750	VAM	on
3751	VAM	off
3834	DA11	on
3835	DA11	off

8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
SAA7325H
7800
+3.3V
3728 47R
3828 47R
2821 100n
DACLEFT_neg
DACLEFT_pos
DACRIGHT_neg
DACRIGHT_pos
3829 100R
2826 47n
GNDA
only for digital out versions (Quartz used)
2819 33p
2820 33p
1810
8.46 MHz
R2 (CD10)
R1 (CD10)
D4 (CD10)
D3 (CD10)
D2 (CD10)
D1 (CD10)
2822 1n5
2823 220u
2824 47n
2825 1n5
3830 4K7
3831 22K
3832 470R
KILL
+5V
CRIN
CROUT
TIMING
VDDA2
BITSTREAM DAC
VSSA2
LN
LP
VNEG
VPOS
RN
RP
SELPLL
TEST1
CL16
DATA
WCLK
SCLK
EF
TEST2
SER. DATA INTERFACE
KILL
VERSAT. INTERF.
VSSD1
V2/V3
WCLI
SDI
SCLI
SER. DATA LOOPBACK INTERF.
drive_recognition
3834 22K
3835 22K
DRIVE = DA11 digital out = off
2827 1n
3837 470R
PORE
ADC
PRE-PROCESSING
CONTROL FUNCTION
AUDIO PROCESSOR
MICROCONTROLLER INTERFACE
RESETn
SDA
SCL
RAB
SILD
STATUS
2828 47p
3838 470R
3839 470R
3840 470R
to 1805 on sheet 2 (uP-interface)
VRIN
VREF GEN.
47n 2818
27K 3826
IREF
VDDA1
VSSA1
ISLICE
HFIN
HFREF
LDON
33R 3827
2817 4u7
HF
FRONT END
EFM DEMOD
SRAM
ADDR
DIG. PLL
MOTOR CONTROL
ERROR CORR.
PEAK DET.
EBU INTERF.
SUBCODE PROCESSOR
OUTPUT STAGES
VERSATILE INTERFACE
TEST3
3841 4K7
RCK
SUB
SFSY
SBSY
CL11/4
3823 3K3
3K3 3822
7802-D
2812 10p
2813 2n2
3824 1K
3825 22K
2814 47n
2815 47p
2816 22n
2811
EYE-PATTERN
800mVpp
TB = 0.5 s/div
LOW = CD_RW (high gain)
+3servo
3846 22K
Innersw
3750 22K
3751 22K
drive_recognition
M2
M1
2831 1u
3845 2R2
3745 10R
SL
FO
RA
2830 1u
3844 100R
+3servo
for digital out: 33E
Vref
2829 47n
3842 1K
3843 1K
EBUGND
DOBM
to dig. out circuitry on sheet 2
EVM
Vdc measured during PLAY with normal CD or CD-R
Vdc measured during PLAY with CD-RW
@... for provision only
CD99 Schematic Part1 18081999

1821	D10
1822	E4
1823	B10
1824	D10
2701	E2
2702	E2
2703	E4
2704	E3
2843	A5
2844	A5
2845	A6
2846	A7
2847	A8
2848	C5
2849	C5
2850	B6
2851	C7
2852	C8
2853	E6
2854	D6
2855	D6
2856	E10
2857	E6
3701	E1
3702	E2
3703	D3
3704	E4
3705	D3
3788	E9
3836	D10
3867	A5
3868	A5
3869	A6
3870	A6
3871	A7
3872	A8
3873	C5
3874	C5
3875	C5
3876	B6
3877	C6
3878	C7
3879	C8
3880	E7
3881	E7
3882	D7
3883	D6
3884	D6
3885	E8
3886	E8
3887	E9
3888	E9
3889	E10
3900	A5
4804	A4
4805	C4
4806	E9
5802	D3
5803	E6
6877	E7
7810-A	A5
7810-B	C5
7875	E7
8402	C9



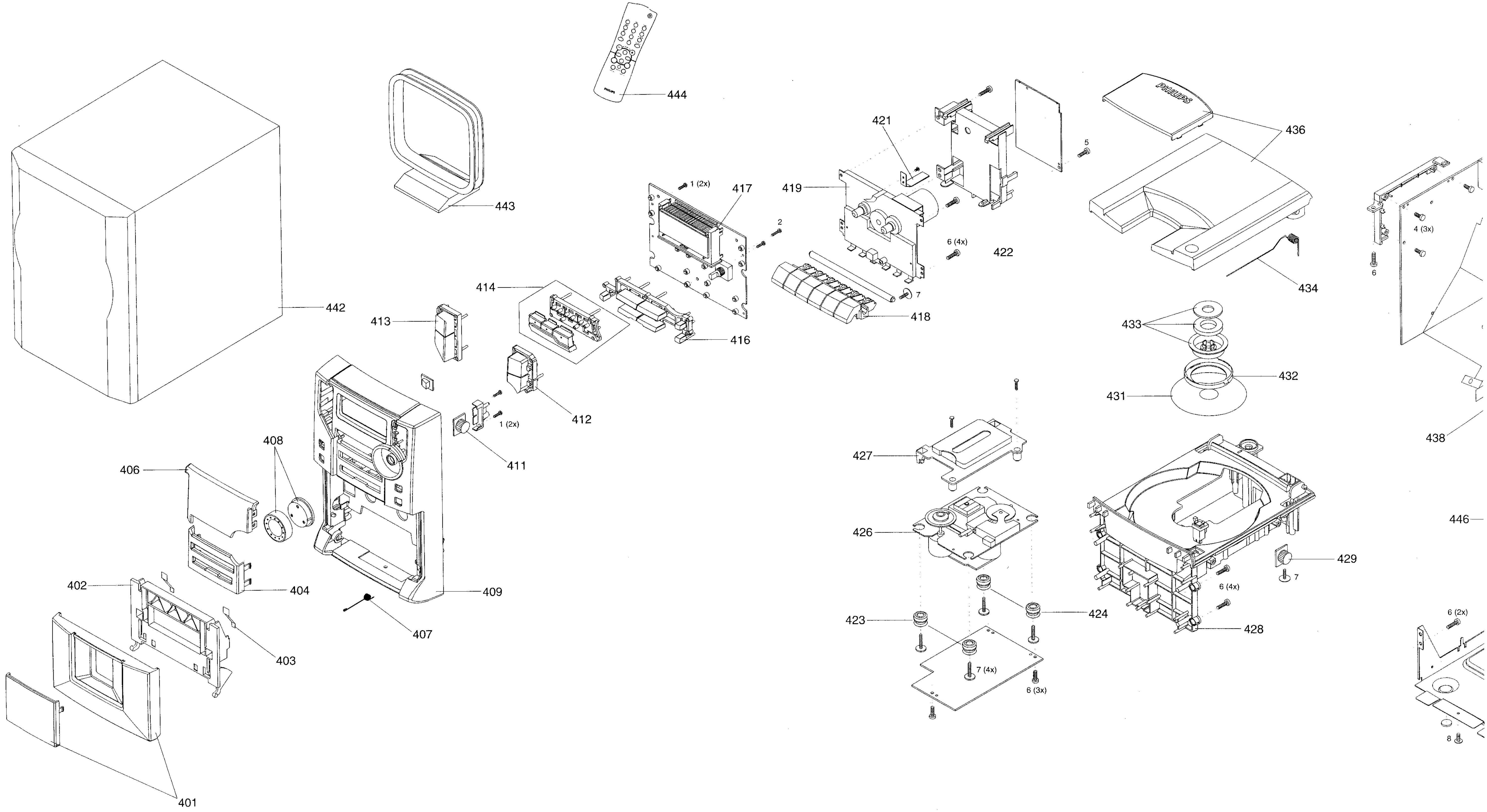
CD Part (sheet 2)

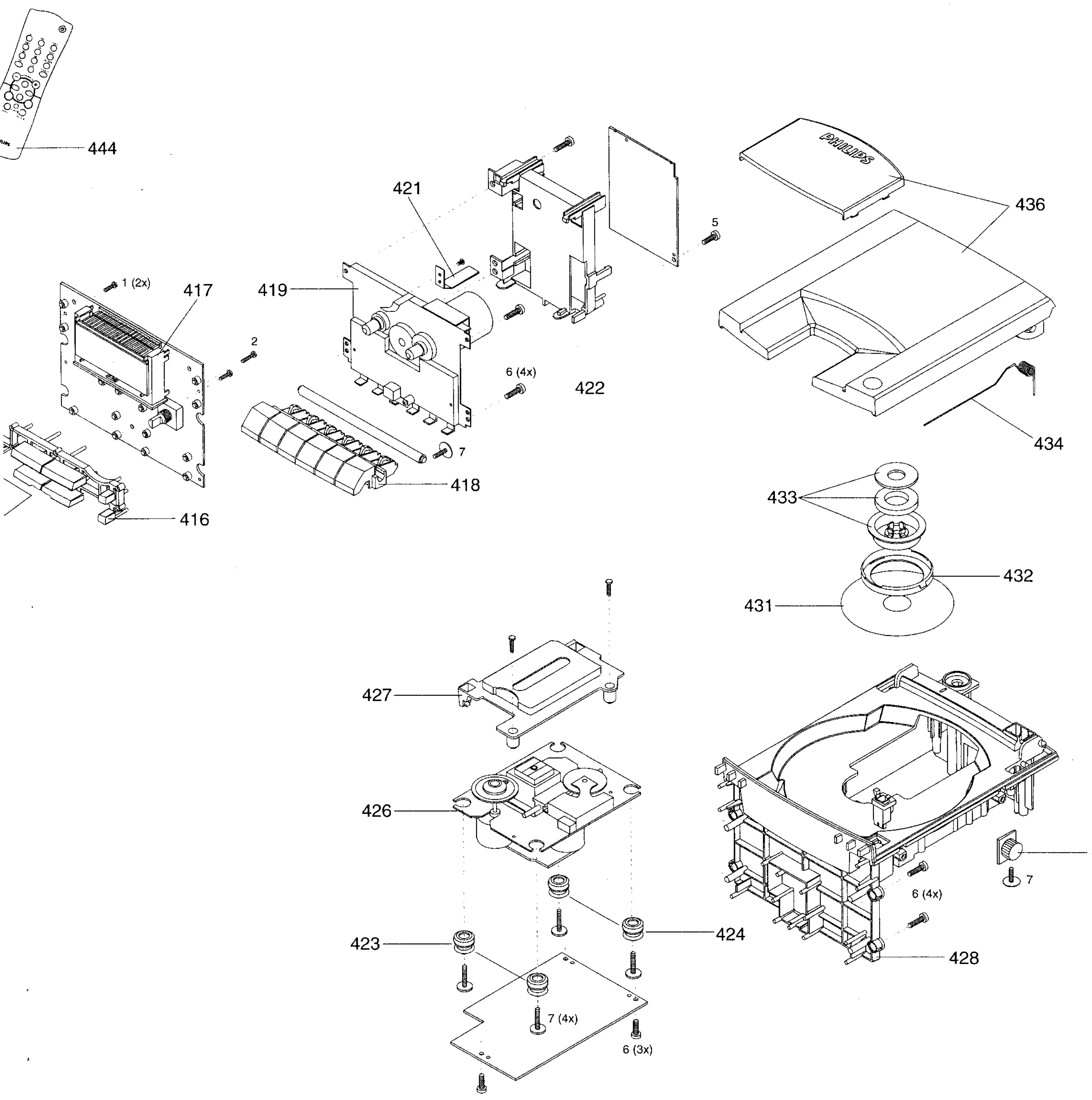
	optical out	coax out
2701	47p	22p
2702	not stuffed	47n
2703	Jumper	100n
2704	not stuffed	100n
5802	not stuffed	stuffed
3701	100R	270R
3702	not stuffed	470R
3703	33R	not stuffed
3705	1R	not stuffed

digital out circuitry (not for all versions)

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
2845 220p
3869 10K
GNDA
DACRIGHT_neg
DACRIGHT_pos
3900 22K
3867 22K
4804 0R
2843 100p
2844 220p
3868 10K
2,5V
TDA 1308
7810-A
5V
+2.5V
3870 10K
3871 470R
2846 10u
2847 470p
3872 47K
2850 220p
3876 10K
DACLEFT_neg
DACLEFT_pos
3873 22K
3874 22K
4805 0R
2848 100p
2849 220p
3875 10K
TDA 1308
7810-B
3877 10K
3878 470R
2851 10u
2852 470p
3879 47K
1823
basic version w/ 6p-connector
LEFT
GND
RIGHT
+5V
GND
+10V
KILL
8402
+10V
FE-ST-VK-N
1821
doorswitch
GND
EH-S
+2.5V
GNDA
3884 1K
3883 1K
3882 100R
2855 220u
2854 220u
from 7800 on sheet1
DOBM
3701 270R
2701 22p
3702 470R
EBUGND
2702 47n
3705 1R
5802 920927152B
3703 33R
+3.3V
3704 10R
2704 10n
2703 100n
EH-S
COAX1/+5V
COAX2/EBU
SHIELD/EBU_GND
DIGout
1822
+5V
+3.3V
5803 1u
2857 47u
7875
BC847B
B3V9
UDZ6877
33R 3880
3881 150R
2853 10n
3,9V
4,8V
3885 10K
3886 10K
3887 10K
3788 4K7
3888 4K7
3836 10K
1824
basic version w/ 5p-connector
PORE
GND
DATA
SICL
SILD
+5V/doorsw
SCL
SILD
SDA
3889 10K
4806 0R
2856 10n
+5V
EVM
Vdc measured during PLAY with normal CD or CD-R
Vdc measured during PLAY with CD-RW
@... for provision only
CD99 Schematic Part2 18081999

EXPLODED VIEW DIAGRAM - CABINET


444
443
442
421
436
1 (2x)
417
419
2
5
6 (4x)
422
4 (3x)
6
434
414
413
418
7
416
433
432
431
412
1 (2x)
411
408
406
427
438
426
446
429
7
6 (4x)
409
404
402
424
423
428
6 (2x)
7 (4x)
6 (3x)
403
407
8
401


444
421
417
1 (2x)
419
2
6 (4x)
422
7
418
416
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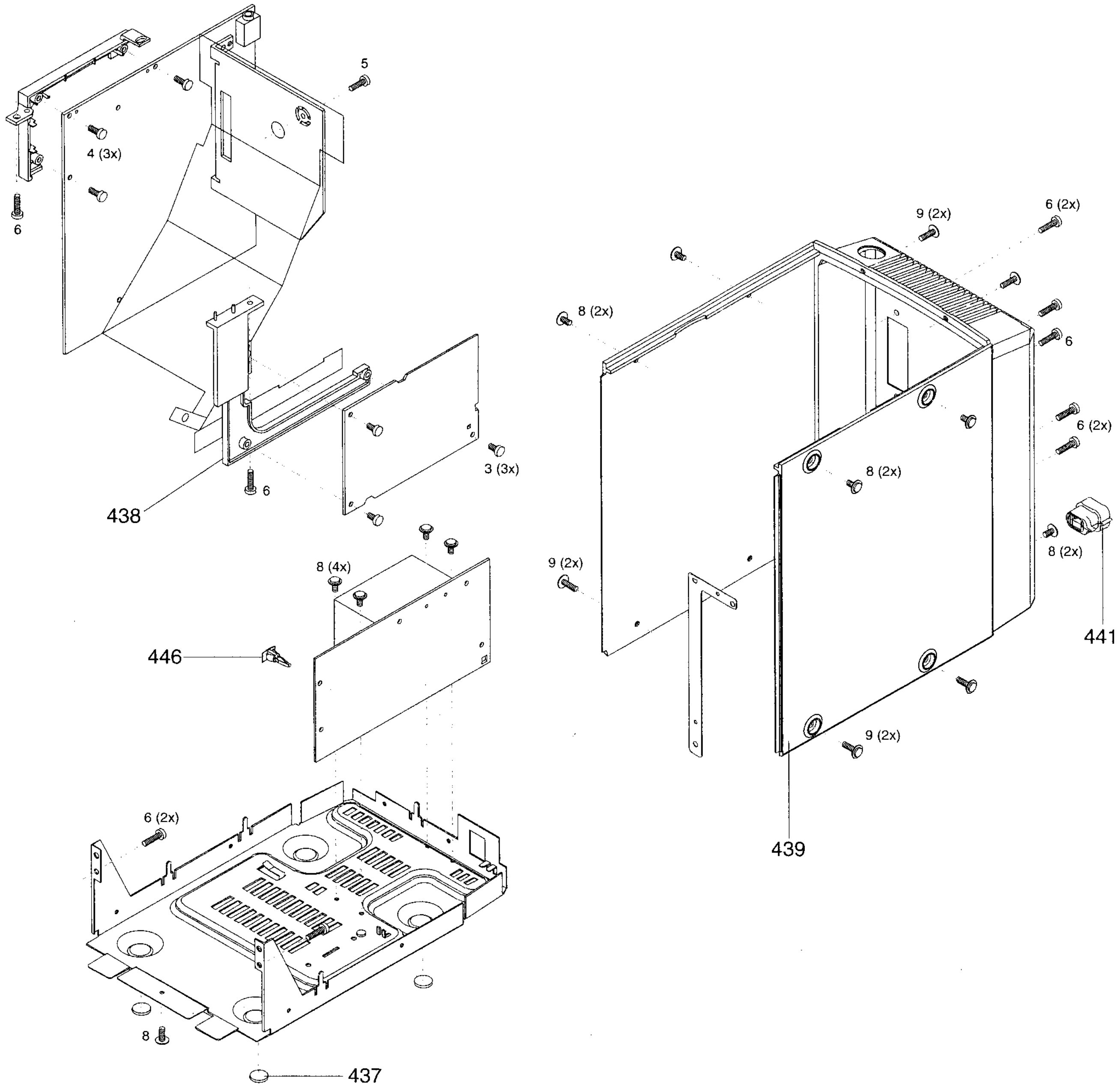
436
434
433
432
431
427
426
423
424
7 (4x)
6 (3x)
428
429
7
6 (4x)


5
4 (3x)
6
438
6
3 (3x)
8 (4x)
446
6 (2x)
8
437
9 (2x)
6 (2x)
8 (2x)
6
6 (2x)
8 (2x)
8 (2x)
9 (2x)
441
9 (2x)
439

SCREW LIST

1. T2 x 10
2. T2.5 x 10
3. T3 x 6
4. T3 x 8
5. T3 x10
6. T3 x12
7. P/W C2.5 x 10
8. P/W T3 x 6
9. P/W T3 x 10

MECHANICAL PARTSLIST - CABINET

401	3140 117 59990	Cassette Door Assy
402	4822 443 10215	Cass Door Bracket
403	4822 492 70231	Spring Leaf
404	3140 114 34780	Front Cabinet Cover
406	3140 117 60050	Front Window Assy
407	4822 492 42709	Cass Door Spring
408	3140 117 59350	Volume Knob Assy
409	3140 117 59960	Front Cab Assy (For -/21/37)
409	3140 117 59970	Front Cab/RDS Assy (For -/22)
411	4822 529 10322	Damper Assy
412	3140 114 34800	Front Knobs Program
413	3140 114 34790	Front Knobs Source
414	3140 117 60480	Chrome Knobs Assy
416	3140 114 34810	Front Knobs Preset
417	3140 114 29180	LCD Holder
418	3140 114 34850	Cassette Key Set
419	4822 691 10633	Tape Deck CDS-83PBF-06
421	3140 111 20800	Spring Recording
422	3140 114 20430	Bracket Recording
423	4822 529 10387	Damper Rubber (40 DEG)
424	4822 529 10386	Damper Rubber (30 DEG)
426	4822 691 10747	CD DA11 Drive Assy
428	3140 114 34770	CD Tray
429	4822 529 10322	Damper Assy
431	4822 535 60096	Disc
432	4822 532 13153	Ring (CD Lid)
433	4822 532 12798	Pressure Ring Assy
434	4822 492 11741	Spring CD
436	3140 117 59980	CD Door Assy
437	4822 462 40692	Rubber Stand

438	3140 114 29310	Tuner Bracket
439	3140 114 34750	Rear Cabinet (For -/21/22)
439	3140 114 34760	Rear Cabinet/USA (For -/37)
441	3140 113 21880	Mains Cord Relief (For -/21/22)
441	3140 113 22100	Mains Cord Relief (For -/37)
442	3140 118 50870	Packed Speaker Box (For -/21/22)
442	3140 118 50880	Packed Speaker Box (For -/37)
443	4822 303 50082	AM Frame
444	3139 228 83200	Remote RC282424/01
446	4822 466 93148	Spacer
	4822 303 50063	FM Antenna Wire (For -/21/22/29)
	4822 320 11094	FM Antenna Wire (For -/37)
	3140 115 27740	Instructions Manual (For -/21/29)
	3140 115 27750	Instructions Manual (For -/22)
	3140 115 27760	Instructions Manual (For -/37)

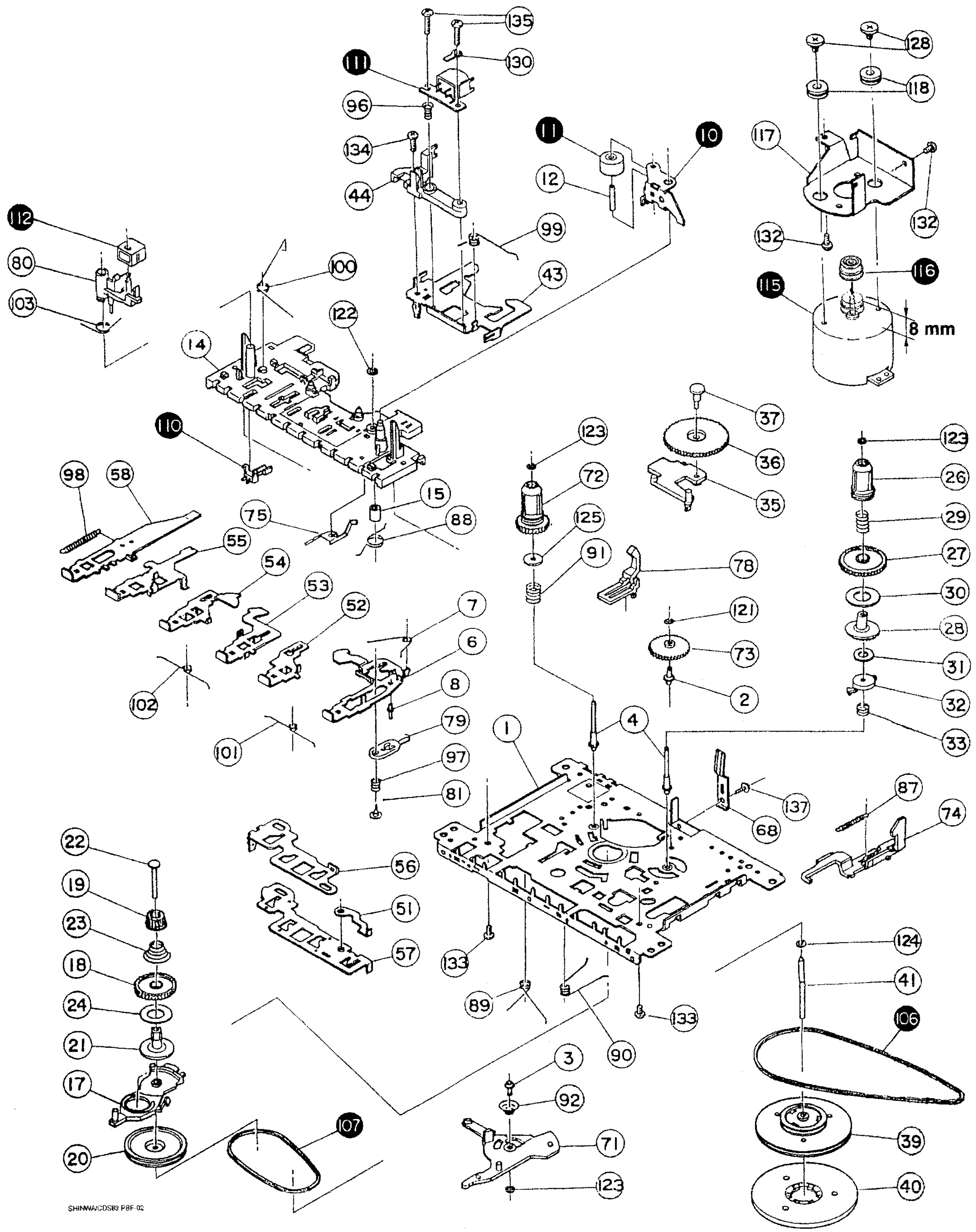
Note: Only these parts mentioned in the list are normal service parts.

MECHANICAL PARTSLIST - TAPE DECK

10,11	4822 528 11189	Pinch Roller Assy
10	4822 528 70849	Pinch Roller Arm (B)
11	4822 528 70695	Pinch Roller Assy
74	4822 403 30792	Eject Hook (B)
106	4822 358 31325	Main Belt 45.2 x 1.2
107	4822 358 31124	Sub Belt 44.7 x 1.2
110	4822 278 90721	Leaf Switch
111	4822 249 30218	MS18R-AKONI
112	4822 249 40306	E. Head
115	4822 361 21656	Motor EG-530AD-9B
116	4822 528 81497	Motor Pulley
131	4822 276 13712	Leaf Switch LSA1115B

Note: Only these parts mentioned in the list are normal service parts.

EXPLODED VIEW DIAGRAM - TAPE DECK (CDS-83-PBF-06)


135
130
111
96
134
44
11
12
10
117
128
118
132
132
112
80
103
100
99
43
116
115
8 mm
122
14
110
98
58
15
88
123
72
125
91
37
36
35
123
26
29
27
30
28
31
32
33
75
55
54
53
52
7
6
8
79
97
81
102
101
1
4
78
121
73
2
137
68
87
74
22
19
23
18
24
21
17
20
56
51
57
133
89
90
133
124
41
106
3
92
107
71
123
39
40
SHINWA/CDS83 PBF-02

ELECTRICAL PARTSLIST - FRONT BOARD

- CAPACITORS -

2400	482212233177	10nF 20% X7R 50V
2401	482212233177	10nF 20% X7R 50V
2402	482212423432	100µF 20% 10V
2403	482212614585	100nF 10% X7R 50V
2404	482212423432	100µF 20% 10V
2405	482212233177	10nF 20% X7R 50V
2406	482212233177	10nF 20% X7R 50V
2407	482212614585	100nF 10% X7R 50V
2408	482212614585	100nF 10% X7R 50V
2409	482212233177	10nF 20% X7R 50V
2410	482212233177	10nF 20% X7R 50V
2411	482212613486	15pF 2% NP0 63V
2412	482212613486	15pF 2% NP0 63V
2413	482212613694	68pF 1% NP0 63V
2414	482212233177	10nF 20% X7R 50V
2415	482212613691	27pF 1% NP0 63V
2416	482212613691	27pF 1% NP0 63V
2417	482212440433	47µF 20% 25V
2418	532212231647	1nF 10% X7R 63V
2419	482212614585	100nF 10% X7R 50V
2420	482212233177	10nF 20% X7R 50V
2421	482212233177	10nF 20% X7R 50V
2422	532212232531	100pF 5% NP0 50V
2423	532212232531	100pF 5% NP0 50V
2424	482212614585	100nF 10% X7R 50V
2425	532212232659	33pF 5% 50V
2426	532212232658	22pF 5% 50V
2427	532211680853	560pF 5% NP0 63V
2428	482212422652	2,2µF20% 50V
2429	482212612787	330pF10% Y5V 50V
2430	532212231647	1nF10%X7R 63V
2431	532212610223	4,7nF 10% X7R 63V
2432	532212232531	100pF 5% NP0 50V
2433	532212232268	470pF 10% 50V
2434	532212232531	100pF 5% NP0 50V
2435	532212232268	470pF 10% 50V
2436	532212232268	470pF 10% 50V
2437	532212232268	470pF 10% 50V
2438	532212232268	470pF 10% 50V
2439	532212232268	470pF 10% 50V
2440	482212233127	2,2nF 10% X7R 63V
2441	482212233177	10nF 20% X7R 50V
2442	482212233575	220pF 5% NP0 63V
2443	482212233575	220pF 5% NP0 63V
2444	482212233575	220pF 5% NP0 63V
2445	482212233575	220pF 5% NP0 63V
2446	482212233177	10nF 20% X7R 50V
2447	532212234099	470pF 10% X7R 63V
2448	532212234099	470pF 10% X7R 63V
2449	532212234099	470pF 10% X7R 63V

- CAPACITORS -

2450	532212234099	470pF 10% X7R 63V
2451	532212234099	470pF 10% X7R 63V

- RESISTORS -

3400	482211652176	10R 5% 0,5W
3401	482211652182	10R 5% 0,5W
3402	482211652175	100R 5% 0,5W
3403	482211711507	6K8 1% 0,1W
3404	482205120182	1K8 5% 0,1W
3405	482205011002	1K 1% 0,4W
3406	482211710837	100K 1% 0.1W
3407	482205110102	1K 2% 0,25W
3408	482205120474	470K 5% 0,1W
3409	482211710833	10K 1% 0,1W
3410	482211652175	100R 5% 0,5W
3411	482211710837	100K 1% 0.1W
3412	482211710833	10K 1% 0,1W
3413	482205110102	1K 2% 0,25W
3414	482205120333	33K 5% 0,1W
3415	482211683933	15K 1% 0,1W
3416	482211683872	220R 5% 0,5W
3417	482211683933	15K 1% 0,1W
3418	482211711139	1K5 1% 0,1W
3419	482211711139	1K5 1% 0,1W
3420	482205021003	10K 1% 0,6W
3421	482205120562	5K6 5% 0,1W
3422	482211683883	470R 5% 0,5W
3423	482205011002	1K 1% 0,4W
3424	482211711139	1K5 1% 0,1W
3425	482211711449	2K2 1% 0,1W
3426	482205120332	3K3 5% 0,1W
3427	482205120562	5K6 5% 0,1W
3428	482211710833	10K 1% 0,1W
3429	482205021003	10K 1% 0,6W
3430	482205120562	5K6 5% 0,1W
3431	482205120471	470R 5% 0,1W
3432	482205110102	1K 2% 0,25W
3433	482211711139	1K5 1% 0,1W
3434	482211711449	2K2 1% 0,1W
3435	482205120332	3K3 5% 0,1W
3436	482205120562	5K6 5% 0,1W
3437	482205120223	22K 5% 0,1W
3438	482205120223	22K 5% 0,1W
3439	482205110102	1K 2% 0,25W
3440	482205110102	1K 2% 0,25W
3441	482205110102	1K 2% 0,25W
3442	482205120333	33K 5% 0,1W
3443	482205023303	33K 5% 0,1W
3444	482211652175	100R 5% 0,5W

ELECTRICAL PARTSLIST - FRONT BOARD

- RESISTORS -

3445	482211711449	2K2 1% 0,1W
3446	482211713579	220K 1% 0.1W
3447	482211710833	10K 1% 0,1W
3448	482211652243	1K5 5% 0,5W
3449	482211652257	22K 5% 0,5W
3450	482211710833	10K 1% 0,1W
3451	482205120471	470R 5% 0,1W
3452	482211710833	10K 1% 0,1W
3453	482205110102	1K 2% 0,25W
3454	482205011002	1K 1% 0,4W
3455	482205110102	1K 2% 0,25W
3456	482205011002	1K 1% 0,4W
3457	482211710833	10K 1% 0,1W
3458	482205110102	1K 2% 0,25W
3459	482211683872	220R 5% 0,5W
3460	482205120471	470R 5% 0,1W
3461	482211652283	4K7 5% 0,5W
3462	482205120472	4K7 5% 0,1W
3463	482211652283	4K7 5% 0,5W
3464	482205120472	4K7 5% 0,1W
3465	482211652283	4K7 5% 0,5W
3466	482205120472	4K7 5% 0,1W
3467	482211652256	2K2 5% 0,5W
3468	482211711449	2K2 1% 0,1W
3469	482211683883	470R 5% 0,5W
3470	482211712955	2K7 1% 0,1W
3471	482205023303	33K 1% 0,6W
3472	482205120474	470K 5% 0,1W
3473	482205120472	4K7 5% 0,1W
3474	482205011002	1K 1% 0,4W
3475	482211713577	330R 1% 1,25W
3476	482211683883	470R 5% 0,5W
3477	482205120471	470R 5% 0,1W
3478	482211683883	470R 5% 0,5W
3479	482205120471	470R 5% 0,1W
3480	482205011002	1K 1% 0,4W
3481	482205120471	470R 5% 0,1W
3482	482205011002	1K 1% 0,4W
3483	482211683933	15K 1% 0,1W
3484	482211710833	10K 1% 0,1W
3485	482211652276	3K9 5% 0,5W
3486	482205120101	100R 5% 0,1W
3487	482211652276	3K9 5% 0,5W
3488	482205120101	100R 5% 0,1W
3489	482205011002	1K 1% 0,4W
3490	482205110102	1K 2% 0,25W
3491	482205011002	1K 1% 0,4W
3492	482205110102	1K 2% 0,25W
3493	482205011002	1K 1% 0,4W
3494	482205110102	1K 2% 0,25W

- RESISTORS -

3496	482205120154	150K 5% 0,1W
3497	482211710833	10K 1% 0,1W
3498	482211710833	10K 1% 0,1W
3499	482205120223	22K 5% 0,1W
4401	482205120008	Jumper
4410	482205120008	Jumper
4411	482205120008	Jumper
4412	482205120008	Jumper
4413	482205120008	Jumper
4414	482205120008	Jumper
4415	482205120008	Jumper
4416	482205120008	Jumper
4417	482205120008	Jumper
4418	482205120008	Jumper
4419	482205120008	Jumper

- COILS, CRYSTAL & FILTERS -

5400	319801811580	Coil 1,5µH 5%
5401	319801811580	Coil 1,5µH 5%
5402	482224272066	Filter CST8,00MT
5403	242254301069	Crystal 32.768kHz
5404	482224272195	Crystal 4.332MHz

- DIODES -

6400	482213030621	Diode 1N4148
6401	482213030621	Diode 1N4148

- IC & TRANSISTORS -

7400	314011050760	IC TMP87CP23F
7402	482213060511	Trans BC847B
7403	482213060511	Trans BC847B
7404	932213714667	Remote Receiver
7405	932214083682	IC M24C01-BN6
7406	482220931981	IC SAA6579T

ELECTRICAL PARTSLIST - FRONT BOARD

- MISCELLANEOUS -

1400	482227613775	Push Switch
1401	482227613775	Push Switch
1402	482227613775	Push Switch
1403	482227613775	Push Switch
1404	482227613775	Push Switch
1405	482227613775	Push Switch
1406	482227613775	Push Switch
1407	482227613775	Push Switch
1408	482227613775	Push Switch
1409	482227613775	Push Switch
1410	482227613775	Push Switch
1411	482227613775	Push Switch
1412	482227613775	Push Switch
1413	482227613775	Push Switch
1414	482227613775	Push Switch
1415	242212916349	Rotary Switch
1416	242202514546	Connector 16P
1418	482226511207	Connector 6P
1420	482226710956	Connector 7P
1425	936028030112	LCD Display

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - LED BOARD

- RESISTORS -

3901	482205120121	120R	5%	0,1W
3902	482205120121	120R	5%	0,1W
3903	482205120121	120R	5%	0,1W
3904	482205120121	120R	5%	0,1W

- DIODES -

6901	932203320682	LED TLHG4405
6902	932203320682	LED TLHG4405
6903	932203320682	LED TLHG4405
6904	932203320682	LED TLHG4405
6905	932203320682	LED TLHG4405
6906	932203320682	LED TLHG4405
6907	932203320682	LED TLHG4405
6908	932203320682	LED TLHG4405
6909	932203320682	LED TLHG4405
6910	932203320682	LED TLHG4405
6911	932203320682	LED TLHG4405
6912	932203320682	LED TLHG4405

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - POWER BOARD

- FILTER -

5600	482215711832	Filter 400μH 3A

- MISCELLANEOUS -

1600	⚠	482227210269	Voltage Selector (For -/21)
1601	⚠	482207153152	Fuse 3.15A
1602	⚠	482207153152	Fuse 3.15A
1602	⚠	482207153152	Fuse 3.15A
3600		482205321106	10M 5% 0,5W (For -/37)
5601	⚠	314011832410	Transf 120/230V (For -/21)
5601	⚠	314011832400	Transf 230V (For -/22/29)
5601	⚠	314011832420	Transf 120V (For -/37)

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - MISCELLANEOUS

- MISCELLANEOUS -

1025		482227613963	CD Door Switch
8000		314011021250	FFC Foil 16P
8001		314011021220	FFC Foil 6P
8005		314011021210	FFC Foil 6P
8007		314011021240	FFC Foil 8P
8008	⚠	482232110781	Mains Cord (For -/21/22)
8008	⚠	242207098116	Mains Cord (For -/29)
8008	⚠	242207098122	Mains Cord (For -/37)

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - COMBI BOARD

- CAPACITORS -

2251	532212142386	100nF 5% 63V
2252	532212142386	100nF 5% 63V
2253	532212142386	100nF 5% 63V
2254	532212142386	100nF 5% 63V
2256	482212481151	22µF 50V
2257	482212440248	10µF 20% 63V
2258	482212440769	4,7µF 20% 100V
2259	482212440769	4,7µF 20% 100V
2260	482212613751	47nF 10% X7R 63V
2262	532212610511	1nF 5% NP0 50V
2264	482212440769	4,7µF 20% 100V
2265	482212440207	100µF 20% 25V
2266	482212614585	100nF 10% X7R 50V
2267	482212440784	3300µF 20% 16V
2268	482212412012	4700µF 20% 25V
2330	482212440769	4,7µF 20% 100V
2331	223891019852	150nF ±80/20 25V
2332	223891019852	150nF ±80/20 25V
2337	482212142408	220nF 5% 63V
2338	482212142408	220nF 5% 63V
2339	482212142408	220nF 5% 63V
2340	482212142408	220nF 5% 63V
2341	482212440433	47µF 20% 25V
2342	482212440433	47µF 20% 25V
2343	482212233197	1nF 10% 50V
2344	482212233197	1nF 10% 50V
2345	532212232654	22nF 10% X7R 63V
2346	532212232654	22nF 10% X7R 63V
2347	482212440433	47µF 20% 25V
2348	482212440433	47µF 20% 25V
2349	482212440207	100µF 20% 25V
2351	482212440769	4,7µF 20% 100V
2352	482212440433	47µF 20% 25V
2353	532212610184	820pF 5% 50V
2354	532212610184	820pF 5% 50V
2500	482212441584	100µF 20% 10V
2501	482212440196	220µF 20% 16V
2502	482212440248	10µF 20% 63V
2503	532212232654	22nF 10% X7R 63V
2505	532212232531	100pF 5% NP0 50V
2506	532212232531	100pF 5% NP0 50V
2507	532212232531	100pF 5% NP0 50V
2508	532212232531	100pF 5% NP0 50V
2509	532212232658	22pF 5% 50V
2510	532212232658	22pF 5% 50V
2511	482212614076	220nF +80-20% 25V
2512	482212614076	220nF +80-20% 25V
2513	482212613692	47F 1% NP0 63V
2514	482212613692	47F 1% NP0 63V
2515	482212233177	10nF 20% X7R 50V
2516	482212233177	10nF 20% X7R 50V
2517	532212231865	1,5nF 10% X7R 63V
2518	532212231865	1,5nF 10% X7R 63V
2519	482212233575	220pF 5% NP0 63V
2520	482212233575	220pF 5% NP0 63V
2521	532212231865	1,5nF 10% X7R 63V
2522	532212231865	1,5nF 10% X7R 63V
2523	482212232535	680pF 10% X7R 63V
2524	482212232535	680pF 10% X7R 63V
2525	482212613692	47F 1% NP0 63V
2526	482212613692	47F 1% NP0 63V
2527	482212233177	10nF 20% X7R 50V
2528	482212233177	10nF 20% X7R 50V
2529	482212614585	100nF 10% X7R 50V
2530	482212614585	100nF 10% X7R 50V
2531	482212614585	100nF 10% X7R 50V
2532	482212614585	100nF 10% X7R 50V
2533	482212613751	47nF 10% X7R 63V
2534	482212613751	47nF 10% X7R 63V
2535	482212614585	100nF 10% X7R 50V
2550	482212611585	22nF +80-20% Y5V 25V
2551	482212233127	2,2nF 10% X7R 63V
2552	482212233127	2,2nF 10% X7R 63V
2553	532212232654	22nF 10% X7R 63V
2554	482212440196	220µF 20% 16V
2555	482212422652	2,2µF 20% 50V
2557	482212613482	470nF 80/20% 16V
2558	482212233575	220pF 5% NP0 63V
2559	482212233575	220pF 5% NP0 63V
2560	482212233575	220pF 5% NP0 63V
2561	482212481151	22µF 50V
2563	482212441407	0,47µF 20% 63V
2564	482212441407	0,47µF 20% 63V
2565	532212232531	100pF 5% NP0 50V
2566	532212232531	100pF 5% NP0 50V
2567	482212422652	2,2µF 20% 50V
2568	482212422652	2,2µF 20% 50V
2569	482212421913	1µF 20% 63V
2570	482212421913	1µF 20% 63V
2571	482212613482	470nF 80/20% 16V
2573	482212614585	100nF 10% X7R 50V

ELECTRICAL PARTSLIST - COMBI BOARD

- RESISTORS -

3250	482205120471	470R 5% 0,1W
3251	482211711449	2K2 1% 0,1W
3252	482205120472	4K7 5% 0,1W
3253	482205120472	4K7 5% 0,1W
3254	482211711449	2K2 1% 0,1W
3255	482205011002	1K 1% 0,4W
3256	482205011002	1K 1% 0,4W
3257	482205011002	1K 1% 0,4W
3258	482211683884	47K 5% 0,5W
3259	482211713577	330R 1% 1,25W
3260	482211713579	220K 1% 0.1W
3261	482211711149	82K 1% 0,1W
3262	482205110102	1K 2% 0,25W
3263	482205120472	4K7 5% 0,1W
3264	482205110102	1K 2% 0,25W
3266	482211710834	47K 1% 0,1W
3267	482211711449	2K2 1% 0,1W
3268	482211711449	2K2 1% 0,1W
3269	482205120223	22K 5% 0,1W
3271	482205024708	4R7 1% 0,6W
3272	482205024708	4R7 1% 0,6W
3273	482205024708	4R7 1% 0,6W
3274	482205120391	390R 5% 0,1W
3275	482211683883	470R 5% 0,5W
3276	482211711449	2K2 1% 0,1W
3277	482211711449	2K2 1% 0,1W
3278	482211710834	47K 1% 0,1W
3279	482205110102	1K 2% 0,25W
3280	482211652257	22K 5% 0,5W
3281	482211711449	2K2 1% 0,1W
3282	482211711449	2K2 1% 0,1W
3283	482211711449	2K2 1% 0,1W
3284	482211711449	2K2 1% 0,1W
3331	482205021003	10K 1% 0,6W
3332	482205021003	10K 1% 0,6W
3333	482211711507	6K8 1% 0,1W
3334	482211711507	6K8 1% 0,1W
3335	482205120228	2R2 5% 0,1W
3336	482205120228	2R2 5% 0,1W
3337	482205120228	2R2 5% 0,1W
3338	482205120228	2R2 5% 0,1W
3339	482205120121	120R 5% 0,1W
3340	482205120121	120R 5% 0,1W
3341	482211652226	560R 5% 0,5W
3342	482211652226	560R 5% 0,5W
3343	482211710833	10K 1% 0,1W
3344	482211710833	10K 1% 0,1W
3345	482211710833	10K 1% 0,1W
3346	482211710833	10K 1% 0,1W
3347	482205120223	22K 5% 0,1W
3348	482205120223	22K 5% 0,1W
3349	482211710834	47K 1% 0,1W
3350	482211710834	47K 1% 0,1W
3351	482205110102	1K 2% 0,25W
3352	482205110102	1K 2% 0,25W
3353	482205120479	47R 5% 0,1W
3358	482205120472	4K7 5% 0,1W
3359	482211711507	6K8 1% 0,1W
3360	482211710837	100K 1% 0.1W
3361	482205120101	100R 5% 0,1W
3500	482211711454	820R 1% 0,1W
3501	482205120471	470R 5% 0,1W
3502	482211652256	2K2 5% 0,5W
3503	482205120471	470R 5% 0,1W
3505	482205120333	33K 5% 0,1W
3506	482205120333	33K 5% 0,1W
3507	482205120159	15R 5% 0,1W
3508	482205120159	15R 5% 0,1W
3509	482205120333	33K 5% 0,1W
3510	482205120333	33K 5% 0,1W
3511	482211710837	100K 1% 0.1W
3512	482211710837	100K 1% 0.1W
3513	482211683933	15K 1% 0,1W
3514	482211683933	15K 1% 0,1W
3515	482205120333	33K 5% 0,1W
3516	482205120333	33K 5% 0,1W
3517	482211710837	100K 1% 0.1W
3518	482211710837	100K 1% 0.1W
3519	482211713579	220K 1% 0.1W
3520	482211713579	220K 1% 0.1W
3521	482205023303	33K 1% 0,6W
3522	482205023303	33K 1% 0,6W
3523	482205023303	33K 1% 0,6W
3524	482205023303	33K 1% 0,6W
3525	482211713579	220K 1% 0.1W
3526	482211713579	220K 1% 0.1W
3527	482211713579	220K 1% 0.1W
3528	482211713579	220K 1% 0.1W
3529	482211652264	27K 5% 0,5W
3530	482211652264	27K 5% 0,5W
3531	482211652264	27K 5% 0,5W
3532	482211652264	27K 5% 0,5W
3533	482205120333	33K 5% 0,1W
3534	482205120333	33K 5% 0,1W
3535	482211710837	100K 1% 0.1W
3536	482211710837	100K 1% 0.1W
3537	482211713579	220K 1% 0.1W
3538	482211713579	220K 1% 0.1W
3539	482205120223	22K 5% 0,1W
3540	482205120223	22K 5% 0,1W

ELECTRICAL PARTSLIST - COMBI BOARD

- RESISTORS -

3541	482205120154	150K	5%	0,1W
3542	482205120154	150K	5%	0,1W
3543	482211711149	82K	1%	0,1W
3544	482211711149	82K	1%	0,1W
3545	482205120822	8K2	5%	0,1W
3546	482205120822	8K2	5%	0,1W
3547	482205120154	150K	5%	0,1W
3548	482205120154	150K	5%	0,1W
3551	482205120333	33K	5%	0,1W
3552	482205120333	33K	5%	0,1W
3553	482205120822	8K2	5%	0,1W
3554	482205120822	8K2	5%	0,1W
3555	482211711507	6K8	1%	0,1W
3556	482211711507	6K8	1%	0,1W
3557	482211710965	18K	1%	0,1W
3558	482211710965	18K	1%	0,1W
3559	482211712955	2K7	1%	0,1W
3560	482211712955	2K7	1%	0,1W
3561	482205021003	10K	1%	0,6W
3562	482205021003	10K	1%	0,6W
3563	482205120101	100R	5%	0,1W
3565	482205120229	22R	5%	0,1W
3566	482205120229	22R	5%	0,1W
3568	482205110102	1K	2%	0,25W
3572	482211710833	10K	1%	0,1W
3573	482205011002	1K	1%	0,4W
3574	482211710834	47K	1%	0,1W
3575	482211683933	15K	1%	0,1W
3576	482211683933	15K	1%	0,1W
3577	482205120471	470R	5%	0,1W
3578	482205120471	470R	5%	0,1W
3579	482205120154	150K	5%	0,1W
3580	482205120154	150K	5%	0,1W
3581	482211712955	2K7	1%	0,1W
3582	482211712955	2K7	1%	0,1W
3583	482205120472	4K7	5%	0,1W
3584	482205120472	4K7	5%	0,1W
3585	482211711449	2K2	1%	0,1W
3586	482211711449	2K2	1%	0,1W
3587	482205120392	3K9	5%	0,1W
3588	482205120392	3K9	5%	0,1W
3589	482211683872	220R	5%	0,5W
4260	482205120008	Jumper		
4261	482205120008	Jumper		
4262	482205120008	Jumper		
4263	482205120008	Jumper		
4264	482205120008	Jumper		
4265	482205120008	Jumper		
4266	482205120008	Jumper		
4333	482205120008	Jumper		

- RESISTORS -

4334	482205120008	Jumper
4335	482205120008	Jumper
4510	482205120008	Jumper
4512	482205120008	Jumper
4513	482205120008	Jumper
4560	482205120008	Jumper
4561	482205120008	Jumper
4562	482205120008	Jumper
4563	482205120008	Jumper
4564	482205120008	Jumper
4565	482205120008	Jumper
4566	482205120008	Jumper
4567	482205120008	Jumper
4568	482205120008	Jumper
4569	482205120008	Jumper
4570	482205120008	Jumper
4571	482205120008	Jumper
4572	482205120008	Jumper
4573	482205120008	Jumper

- COILS -

5331	482215711837	Coil 0,36μH 10%
5332	482215711837	Coil 0,36μH 10%
5333	482215711837	Coil 0,36μH 10%
5334	482215711837	Coil 0,36μH 10%
5550	319801814770	Coil 470nH 10%
5551	319801814770	Coil 470nH 10%

- DIODES -

6254	482213031878	Diode 1N4003G
6255	482213031878	Diode 1N4003G
6256	482213031878	Diode 1N4003G
6257	482213031878	Diode 1N4003G
6258	482213031878	Diode 1N4003G
6259	482213031878	Diode 1N4003G
6260	482213031878	Diode 1N4003G
6261	482213031878	Diode 1N4003G
6262	482213031878	Diode 1N4003G
6263	482213031878	Diode 1N4003G
6264	482213031878	Diode 1N4003G
6265	482213031878	Diode 1N4003G
6266	482213030621	Diode 1N4148
6267	482213030621	Diode 1N4148
6268	319801058280	Diode BZX79-B8V2
6269	482213030621	Diode 1N4148
6270	482213030621	Diode 1N4148
6271	482213034278	Diode BZX79-B6V8
6272	482213061219	Diode BZX79-B10
6275	319801053380	Diode BZX79-B3V3

ELECTRICAL PARTSLIST - COMBI BOARD

- DIODES -

6331	482213030621	Diode 1N4148
6332	482213030621	Diode 1N4148
6333	482213030621	Diode 1N4148
6500	482213030621	Diode 1N4148
6550	319801053380	Diode BZX79-B3V3

- IC & TRANSISTORS -

7250	932213924687	Trans BDW94CFP
7251	482213060511	Trans BC847B
7252	482213060511	Trans BC847B
7253	532213044647	Trans BC368
7254	482213063353	Trans BC369G
7255	482213060511	Trans BC847B
7256	482213041246	Trans BC327-25
7257	482213041246	Trans BC327-25
7258	482213041246	Trans BC327-25
7259	482213060511	Trans BC847B
7260	532213060845	Trans BC807-25
7261	482213060511	Trans BC847B
7330	482220916224	IC AN7125
7331	482213060373	Trans BC856B
7332	482213060373	Trans BC856B
7333	482213060511	Trans BC847B
7500	482220910264	IC HEF4069UBD
7501	482213044568	Trans BC557B
7502	482213044568	Trans BC557B
7503	482213044568	Trans BC557B
7504	482213044568	Trans BC557B
7505	482213060511	Trans BC847B
7506	482213060511	Trans BC847B
7507	482213060511	Trans BC847B
7508	482213060511	Trans BC847B
7509	482213060511	Trans BC847B
7510	482213060511	Trans BC847B
7511	482213060511	Trans BC847B
7512	482213060511	Trans BC847B
7513	482213060511	Trans BC847B
7514	482213060511	Trans BC847B
7550	482213042804	Trans BC817-25
7551	482220910263	IC HEF4052BP
7552	532220910421	HEF4094BP
7553	932200363676	Trans TBC327-40
7555	482213060511	Trans BC847B
7556	482213060511	Trans BC847B

- MISCELLANEOUS -

1330	824099024940	Socket Headphone
1331	482226731176	Connector Terminal
1550	482226520553	RCA Connector
1551	482226710953	Connector 7P
1554	482226710731	Connector 6P
1555	482226511515	Connector 8P
	482249271733	Clamp Steel (For Item 7330)
	482225540179	Clip Steel (For Item 7250)

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLISL - TUNER BOARD ECO6 (Cenelec)

- CAPACITORS -

2106	202080000204	Var Cap 4,2pF-20pF 100V
2107	482212151319	1µF 10% 63V
2108	532212232531	100pF 5% NP0 50V
2109	532212232448	10pF 5% NP0 63V
2120	532212232658	22pF 5% 50V
2122	482212233891	3,3nF 10% X7R 63V
2123	202055293494	Ceramic 390pF 50V
2125	202055296199	Ceramic 560pF 50V
2127	482212614076	220nF 25V P8020
2128	482212440248	10µF 20% 63V
2129	482212441584	100µF 20% 10V
2130	532212232654	22nF 10% X7R 63V
2131	482212613482	470nF 80/20% 16V
2132	482212613482	470nF 80/20% 16V
2133	482212421913	1µF 20% 63V
2134	482212613188	15nF 5% X7R 63V
2135	482212613188	15nF 5% X7R 63V
2136	482212614076	220nF 25V P8020
2137	482212614076	220nF 25V P8020
2138	482212422652	2,2µF 20% 50V
2139	482212614236	15pF 5% 50V
2140	482212613695	82pF 1% NP0 63V
2141	482212613838	100nF Y5V 50V P80M20
2143	482212614076	220nF 25V P8020
2144	482212421913	1µF 20% 63V
2145	482212233575	220pF 5% NP0 63V
2146	482212233575	220pF 5% NP0 63V
2147	482212233575	220pF 5% NP0 63V
2148	482212233127	2,2nF 10% X7R 63V
2149	532212232659	33pF 5% 50V
2150	482212613838	100nF Y5V 50V P80M20
2159	532212232659	33pF 5% 50V
2162	482212481151	22µF 50V
2163	482212613838	100nF Y5V 50V P80M20
2164	482212613482	470nF 80/20% 16V
2165	482212613838	100nF Y5V 50V P80M20
2166	532212231647	1nF 10% X7R 63V
2167	482212233926	12pF 50V
2169	482212233127	2,2nF 10% X7R 63V

- RESISTORS -

3105	482211711503	220R 1% 0.1W
3108	482211711449	2K2 1% 0,1W
3109	482205120472	4K7 5% 0,1W
3123	482205120472	4K7 5% 0,1W
3125	482211710833	10K 1% 0,1W
3128	482211711449	2K2 1% 0,1W
3132	482205120479	47R 5% 0,1W
3134	482205120223	22K 5% 0,1W
3137	482205120223	22K 5% 0,1W
3141	482211711148	56K 1% 0,1W
3142	482210012159	100K 30%
3143	482205120223	22K 5% 0,1W
3144	482205110102	1K 2% 0,25W
3145	482211711449	2K2 1% 0,1W
3146	482205120229	22R 5% 0,1W
3150	482211710833	10K 1% 0,1W
3151	482205120683	68K 5% 0,1W
3152	482205120471	470R 5% 0,1W
3153	482205120471	470R 5% 0,1W
3154	482211713577	330R 1% 1,25W
3155	482211710353	150R 1% 0,1W
3158	482205120471	470R 5% 0,1W
3159	482205120471	470R 5% 0,1W
3160	482205120471	470R 5% 0,1W
3161	482205120223	22K 5% 0,1W
3167	482205120121	120R 5% 0,1W
3168	482205120121	120R 5% 0,1W
3169	482205120154	150K 5% 0,1W
3171	482211710834	47K 1% 0,1W
3172	482205120562	5K6 5% 0,1W
3176	482205120333	33K 5% 0,1W
3180	482211710833	10K 1% 0,1W
3190	482205120121	120R 5% 0,1W
3191	482205120121	120R 5% 0,1W
3192	482211713577	330R 1% 1,25W
3193	482211713577	330R 1% 1,25W
3194	482211711449	2K2 1% 0,1W
3195	482205120101	100R 5% 0,1W
4105	482205120008	Jumper
4106	482205120008	Jumper
4107	482205120008	Jumper

- COILS, CRYSTAL & FILTERS -

5102	482215771634	MW Aerial
5103	242254944107	Coil 252kHz
5109	482215771639	Filter SFE10,7MJA10H-A-TF21
5110	482224270665	Filter SFE10,7MS3-A
5111	242254944023	Coil 450kHz
5112	482215770302	Coil F7MCS-12216N
5114	482215770302	Coil F7MCS-12216N
5115	482215771636	Birdie Coil
5119	482215711443	Coil 2,4µH
5121	482224210261	Crystal T6252F00 75kHz

ELECTRICAL PARTSLISL - TUNER BOARD ECO6 (Cenelec)

- COILS & FILTERS -

5122	242254944108	Coil 796kHz
5123	242254944108	Coil 796kHz

- DIODES -

6105	482213083075	Diode HN1V02H-B
6106	482213083757	Diode BAS216
6107	934038690115	Diode BZX284-C11
6120	482213083757	Diode BAS216

- IC & TRANSISTORS -

7101	482220990315	IC TEA5762H/V1
7103	532213042756	Trans BC857C
7104	932200364676	Trans TBC337-40
7105	932200364676	Trans TBC337-40
7109	482213060373	Trans BC856B
7110	482213060373	Trans BC856B
7112	482213044503	Trans BC547C
7122	532213042755	Trans BC847C
7124	532213042755	Trans BC847C

- MISCELLANEOUS -

1102	482226710283	Connector YKD31-0432
1103	482226531184	Connector S2B-XH-A-BK
1110	242254290071	FM Frontend FE450-G01
1120	482226511515	Connector 8P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Non Cenelec)

- CAPACITORS -

2101	482212613692	47pF 1% NP0 63V
2103	532212231647	1nF 10% X7R 63V
2104	532212232531	100pF 5% NP0 50V
2106	202080000191	Var Cap 3pF-11pF 100V
2107	482212151319	1µF 10% 63V
2120	482212613689	18pF 1% NP0 63V
2124	532212232654	22nF 10% X7R 63V
2125	202055296199	Ceramic 390pF 50V
2126	532212231863	Ceramic 330pF 63V
2127	482212614076	220nF 25V P8020
2128	482212440248	10µF 20% 63V
2129	482212441584	100µF 20% 10V
2130	532212232654	22nF 10% X7R 63V
2131	482212613482	470nF 80/20% 16V
2132	482212613482	470nF 80/20% 16V
2133	482212421913	1µF 20% 63V
2134	482212613188	15nF 5% X7R 63V
2135	482212613188	15nF 5% X7R 63V
2136	482212614076	220nF 25V P8020
2137	482212614076	220nF 25V P8020
2138	482212422652	2,2µF 20% 50V
2139	482212614236	15pF 5% 50V
2140	482212613695	82pF 1% NP0 63V
2141	482212613838	100nF Y5V 50V P80M20
2143	482212614076	220nF 25V P8020
2144	482212421913	1µF 20% 63V
2145	482212233575	220pF 5% NP0 63V
2146	482212233575	220pF 5% NP0 63V
2147	482212233575	220pF 5% NP0 63V
2148	482212233127	2,2nF 10% X7R 63V
2150	482212613838	100nF Y5V 50V P80M20
2152	482212612105	Ceramic 33nF 50V
2153	482212613486	15pF 2% NP0 63V
2155	202080000191	Var Cap 3pF-11pF 100V
2159	532212232659	33pF 5% 50V
2164	482212613482	470nF 80/20% 16V
2165	482212613838	100nF Y5V 50V P80M20
2166	532212231647	1nF 10% X7R 63V
2167	482212233926	12pF 50V

- RESISTORS -

3101	482205120333	33K 5% 0,1W
3102	482211710837	100K 1% 0.1W
3103	482205120822	8K20 5% 0,1W
3104	482211713577	330R 1% 1,25W
3105	482211711503	220R 1% 0.1W

- RESISTORS -

3132	482205120479	47R 5% 0,1W
3134	482205120223	22K 5% 0,1W
3141	482211711148	56K 1% 0,1W
3142	482210012159	100K 30%
3145	482211711449	2K2 1% 0,1W
3146	482205120229	22R 5% 0,1W
3152	482205120471	470R 5% 0,1W
3153	482205120471	470R 5% 0,1W
3154	482211713577	330R 1% 1,25W
3155	482211711503	220R 1% 0.1W
3156	482211710837	100K 1% 0.1W
3158	482205120471	470R 5% 0,1W
3159	482205120471	470R 5% 0,1W
3160	482205120471	470R 5% 0,1W
3161	482205120223	22K 5% 0,1W
3167	482205120121	120R 5% 0,1W
3168	482205120121	120R 5% 0,1W
3169	482205120154	150K 5% 0,1W
3170	482211710837	100K 1% 0.1W
3172	482205120562	5K6 5% 0,1W
3181	482205110102	1K 2% 0,25W
4103	482205120008	Jumper
4106	482205120008	Jumper
4107	482205120008	Jumper
4108	482205120008	Jumper

- COILS & FILTERS -

5102	482215771634	MW Aerial
5109	482224270665	Filter SFE10,7MS3-A
5110	482224270665	Filter SFE10,7MS3-A
5111	242254944023	Coil 450kHz
5112	482215770302	Coil F7MCS-12216N
5114	482215770302	Coil F7MCS-12216N
5119	482215711443	Coil 2,4µH
5121	482224210261	Crystal T6252F00 75kHz
5123	242254944108	Coil 796kHz
5130	482215711843	Coil MD7B-01F
5131	482215711843	Coil MD7B-01F

- DIODES -

6103	532213034337	Diode BAV99
6105	482213083075	Diode HN1V02H-B
6106	482213083757	Diode BAS216
6107	934038690115	Diode BZX284-C11
6130	482213082833	Diode 1SV228
6131	482213082833	Diode 1SV228

ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Non Cenelec)

- IC & TRANSISTORS -

7101	935174080557	IC TEA5757H/V1
7102	482213042131	Trans BF550
7111	532213042755	Trans BC847C
7112	482213044503	Trans BC547C

- MISCELLANEOUS -

1102	482226710283	Connector YKD31-0432
1103	482226531184	Connector S2B-XH-A-BK
1120	482226511515	Connector 8P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - RECORDER BOARD

- CAPACITORS -

2700	482212421913	1µF 20% 63V
2701	482212421913	1µF 20% 63V
2703	482212481151	22µF 50V
2704	482212481151	22µF 50V
2706	482212440433	47µF 20% 25V
2707	482212440196	220µF 20% 16V
2708	482212440433	47µF 20% 25V
2709	482212440433	47µF 20% 25V
2710	482212441584	100µF 20% 10V
2711	482212481151	22µF 50V
2712	482212612878	1,5nF 10% 16V
2714	482212612878	1,5nF 10% 16V
2715	482212151387	10nF 20% 16V
2716	482212612882	100nF +80-20% 50V
2719	482212613098	5,6nF 20% 16V
2721	482212612878	1,5nF 10% 16V
2722	482212151387	10nF 20% 16V
2723	482212612882	100nF +80-20% 50V
2726	482212613098	5,6nF 20% 16V
2727	482212612878	1,5nF 10% 16V
2728	482212611714	4,7nF 20%
2729	482212611714	4,7nF 20%
2730	202030090561	1,2nF PM10 50V
2732	482212210577	3,3nF 10% 16V
2733	482212151387	10nF 20% 16V
2738	482212151387	10nF 20% 16V
2739	482212151387	10nF 20% 16V
2750	482212613098	5,6nF 20% 16V
2751	482212613098	5,6nF 20% 16V

- RESISTORS -

3701	482211652175	100R 5% 0,5W
3703	482211683868	150R 5% 0,5W
3704	482211683872	220R 5% 0,5W
3706	482211652272	330K 5% 0,5W
3707	482211652285	470K 5% 0,5W
3710	482211652264	27K 5% 0,5W
3712	482211652238	12K 5% 0,5W
3713	482211683868	150R 5% 0,5W
3714	482211683872	220R 5% 0,5W
3716	482211652272	330K 5% 0,5W
3719	482211652264	27K 5% 0,5W
3720	482211652238	12K 5% 0,5W
3722	482211652257	22K 5% 0,5W
3723	482211652257	22K 5% 0,5W
3724	482205021003	10K 1% 0,6W
3726	482211652256	2K2 5% 0,5W
3727	482211652256	2K2 5% 0,5W
3728	482205021003	10K 1% 0,6W
3730	482211683868	150R 5% 0,5W
3731	482211652291	56K 5% 0,5W
3732	482211652176	10R 5% 0,5W
3733	482211130893	4M7 5% 0,2W
3734	482205021003	10K 1% 0,6W
3736	482211652234	100K 5% 0,5W
3737	482205021003	10K 1% 0,6W
3738	482211652234	100K 5% 0,5W
3739	482205021003	10K 1% 0,6W
3740	482211652234	100K 5% 0,5W
3743	482211683883	470R 5% 0,5W
3744	482211683883	470R 5% 0,5W
3747	482211683868	150R 5% 0,5W
3748	482211683883	470R 5% 0,5W
3749	482211683883	470R 5% 0,5W
3761	482211652289	5K6 5% 0,5W
3762	482211652289	5K6 5% 0,5W

- COILS -

5701	482215710371	Inductor 100kHz

- DIODES -

6704	482213030621	Diode 1N4148

- IC & TRANSISTORS -

7701	482213040959	Trans BC547B
7702	482213040981	Trans BC337-25
7703	482213040981	Trans BC337-25
7704	482213040981	Trans BC337-25
7705	482220917498	IC AN7323

- MISCELLANEOUS -

1707	482227711504	Push Switch
1725	482226511207	Connector 6P

Note: Only these parts mentioned in the list are normal service parts.

ELECTRICAL PARTSLIST - CD99 DA11

- CAPACITORS -

2801	482212441751	47µF 20% 50V
2802	482212441751	47µF 20% 50V
2803	482212613695	82pF 1% NP0 63V
2804	482212613695	82pF 1% NP0 63V
2805	482212613695	82pF 1% NP0 63V
2806	482212613695	82pF 1% NP0 63V
2807	482212613691	27pF 1% NP0 63V
2808	532212233538	150pF 2% NP0 63V
2809	482212613691	27pF 1% NP0 63V
2810	482212613691	27pF 1% NP0 63V
2811	532212232659	33pF 5% 50V
2812	532212232448	10pF 5% NP0 63V
2813	482212233127	2,2nF 10% X7R 63V
2814	482212613751	47nF 10% X7R 63V
2815	482212613692	47pF 1% NP0 63V
2816	532212232654	22nF 10% X7R 63V
2817	482212440769	4,7µF 20% 100V
2818	482212613751	47nF 10% X7R 63V
2821	482212614585	100nF 10% X7R 50V
2822	482212613344	1,5nF 5% 63V
2823	482212442383	220µF 20% 4V
2824	482212613751	47nF 10% X7R 63V
2825	482212613344	1,5nF 5% 63V
2826	482212613751	47nF 10% X7R 63V
2827	532212231647	1nF 10% X7R 63V
2828	482212613692	47pF 1% NP0 63V
2829	482212613751	47nF 10% X7R 63V
2830	482212614043	1µF +80-20% Y5V 16V
2831	482212614043	1µF +80-20% Y5V 16V
2832	532212233538	150pF 2% NP0 63V
2833	532212232268	470pF 10% 50V
2834	482212233216	270pF 5% NP0 50V
2835	532212232268	470pF 10% 50V
2836	482212441751	47µF 20% 50V
2837	482212613751	47nF 10% X7R 63V
2838	532212232654	22nF 10% X7R 63V
2839	482212614585	100nF 10% X7R 50V
2840	482212441751	47µF 20% 50V
2841	482212613751	47nF 10% X7R 63V
2842	482212421913	1µF 20% 63V
2843	532212232531	100pF 5% NP0 50V
2844	482212233575	220pF 5% NP0 63V
2845	482212233575	220pF 5% NP0 63V
2846	482212440248	10µF 20% 63V
2848	532212232531	100pF 5% NP0 50V
2849	482212233575	220pF 5% NP0 63V
2850	482212233575	220pF 5% NP0 63V
2851	482212440248	10µF 20% 63V
2853	482212233177	10nF 20% X7R 50V
2854	482212411912	220µF 20% 6,3V
2855	482212411912	220µF 20% 6,3V
2857	482212412362	47µF 4V 20%
2860	532211680853	560pF 5% NP0 63V
2861	532212231865	1,5nF 10% X7R 63V
2862	482212610326	180pF 5%NP0 63V
2863	482212610326	180pF 5%NP0 63V
2864	482212610326	180pF 5%NP0 63V
2865	482212610326	180pF 5%NP0 63V
2869	482212613751	47nF 10% X7R 63V
2870	482212233575	220pF 5% NP0 63V
2871	482212233575	220pF 5% NP0 63V
2872	482212233575	220pF 5% NP0 63V
2873	482212233575	220pF 5% NP0 63V
2874	482212233575	220pF 5% NP0 63V
2875	482212233575	220pF 5% NP0 63V

- RESISTORS -

3728	482205120479	47R 5% 0,1W
3745	482205120109	10R 5% 0,1W
3757	482205120223	22K 5% 0,1W
3788	482205120472	4K7 5% 0,1W
3800	482205120478	4R70 5% 0,1W
3801	482205120154	150K 5% 0,1W
3802	482205110102	1K 2% 0,25W
3803	482205120273	27K 5% 0,1W
3804	482205120472	4K7 5% 0,1W
3805	482205120273	27K 5% 0,1W
3806	482211710361	680R 1% 0,1W
3807	482211711139	1K5 1% 0,1W
3808	482205120339	33R 5% 0,1W
3809	482205120339	33R 5% 0,1W
3810	482205210478	4R7 5% 0,33W
3811	482205110102	1K 2% 0,25W
3812	482205120474	470K 5% 0,1W
3813	482205120683	68K 5% 0,1W
3814	482205120332	3K3 5% 0,1W
3815	482205120472	4K7 5% 0,1W
3816	482211683933	15K 1% 0,1W
3817	482211710834	47K 1% 0,1W
3818	482205120562	5K6 5% 0,1W
3819	482211683933	15K 1% 0,1W
3820	482211710965	18K 1% 0,1W
3821	482205120332	3K3 5% 0,1W
3822	482205120332	3K3 5% 0,1W
3823	482205120332	3K3 5% 0,1W
3824	482205110102	1K 2% 0,25W
3825	482205120223	22K 5% 0,1W

ELECTRICAL PARTSLIST - CD99 DA11

- RESISTORS -

3826	482205120273	27K	5%	0,1W
3827	482205120339	33R	5%	0,1W
3828	482205120479	47R	5%	0,1W
3829	482205120101	100R	5%	0,1W
3830	482205120472	4K7	5%	0,1W
3835	482205120223	22K	5%	0,1W
3836	482211710833	10K	1%	0,1W
3837	482205120471	470R	5%	0,1W
3838	482205120471	470R	5%	0,1W
3839	482205120471	470R	5%	0,1W
3840	482205120471	470R	5%	0,1W
3841	482205120472	4K7	5%	0,1W
3842	482205110102	1K	2%	0,25W
3843	482205110102	1K	2%	0,25W
3844	482205120101	100R	5%	0,1W
3845	482205120228	2R2	5%	0,1W
3846	482205120223	22K	5%	0,1W
3847	482211711149	82K	1%	0,1W
3848	482211710834	47K	1%	0,1W
3849	482211711148	56K	1%	0,1W
3850	482205120822	8K2	5%	0,1W
3851	482211711148	56K	1%	0,1W
3852	482211710834	47K	1%	0,1W
3853	482211683933	15K	1%	0,1W
3854	482205120822	8K2	5%	0,1W
3855	482211640227	4R6	25%	12V
3856	482205120683	68K	5%	0,1W
3857	482205120683	68K	5%	0,1W
3858	482205120392	3K9	5%	0,1W
3859	482211710834	47K	1%	0,1W
3860	482205110102	1K	2%	0,25W
3861	482211710834	47K	1%	0,1W
3862	482205110102	1K	2%	0,25W
3863	482205210338	3R3	5%	0,33W
3864	482211710833	10K	1%	0,1W
3865	482205110102	1K	2%	0,25W
3867	482205120223	22K	5%	0,1W
3868	482211710833	10K	1%	0,1W
3869	482211710833	10K	1%	0,1W
3871	482205120471	470R	5%	0,1W
3872	482211710834	47K	1%	0,1W
3873	482205120223	22K	5%	0,1W
3874	482205120223	22K	5%	0,1W
3875	482211710833	10K	1%	0,1W
3876	482211710833	10K	1%	0,1W
3878	482205120471	470R	5%	0,1W
3879	482211710834	47K	1%	0,1W
3880	482205120339	33R	5%	0,1W
3881	482211710353	150R	1%	0,1W
3882	482205120101	100R	5%	0,1W

- RESISTORS -

3883	482205110102	1K	2%	0,25W
3884	482205110102	1K	2%	0,25W
3886	482211710833	10K	1%	0,1W
3887	482211710833	10K	1%	0,1W
3888	482205120472	4K7	5%	0,1W
3889	482205110102	1K	2%	0,25W
3890	482211710837	100K	1%	0.1W
3891	482211710837	100K	1%	0.1W
3892	482211710837	100K	1%	0.1W
3893	482211710837	100K	1%	0.1W
3894	482211710833	10K	1%	0,1W
3895	482211710833	10K	1%	0,1W
3896	482211710833	10K	1%	0,1W
3897	482211710833	10K	1%	0,1W
3898	482211710833	10K	1%	0,1W
3899	482211710833	10K	1%	0,1W
3900	482205120223	22K	5%	0,1W
4801	482205120008	Jumper		
4802	482205120008	Jumper		
4807	482205120008	Jumper		
4808	482205120008	Jumper		
4809	482205120008	Jumper		
4810	482205120008	Jumper		
4812	482205120008	Jumper		
4813	482205120008	Jumper		
4814	482205120008	Jumper		
4815	482205120008	Jumper		
4823	482205120008	Jumper		
4824	482205120008	Jumper		
4828	482205120008	Jumper		
4831	482205120008	Jumper		
4832	482205120008	Jumper		
4838	482205120008	Jumper		
4845	482205120008	Jumper		
4847	482205120008	Jumper		
4848	482205120008	Jumper		
4850	482205120008	Jumper		
4853	482205120008	Jumper		
4856	482205120008	Jumper		
4857	482205120008	Jumper		
4859	482205120008	Jumper		
4863	482205120008	Jumper		
4865	482205120008	Jumper		
4866	482205120008	Jumper		
4872	482205120008	Jumper		
4877	482205120008	Jumper		
4881	482205120008	Jumper		
4884	482205120008	Jumper		
4885	482205120008	Jumper		
4886	482205120008	Jumper		

ELECTRICAL PARTSLIST - CD99 DA11

- RESISTORS -

4888	482205120008	Jumper
4889	482205120008	Jumper

- COILS & FILTERS -

1810	482224273557	Filter CST8,46MTW-TF01
5803	482215711231	Coil LAN02TB1R0J

- DIODES -

6877	482213011564	Diode UDZ3.9B

- IC & TRANSISTORS -

7800	482220917324	IC SAA7325H
7802	532220911517	IC PC74HCU04T
7803	532213060123	Trans BC807-40
7804	532220982941	IC LM358D
7807	532213042755	Trans BC847C
7808	482220932852	IC TDA7073A/N2
7809	482220932852	IC TDA7073A/N2
7810	482220933165	IC TDA1308T/N1
7875	482213060511	Trans BC847B

- MISCELLANEOUS -

1800	482226510925	Connector 15P
1823	482226511207	Connector 6P
1824	482226511207	Connector 6P
8800	482232012178	Flexible Foil 15P

Note : Only these parts mentioned in the list are normal service parts.